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THE SWEDISH ARCTIC EXPEDITION.

THE Swedish Arctic Expedition sailed from Gothenburg on the 3rd of July 1878 under most happy auspices, and with every prospect of securing a large measure of success.

In their northern explorations the Swedes have gone to work on a wise and systematic plan. Their views are similar to those which were so long advocated by the late Admiral Sherard Osborn, and the Council of the English Geographical Society, and which led to the despatch of the late most successful English Arctic Expedition. They have carefully avoided all clap-trap about reaching the Pole; they have diligently profited by former experience; and they hold that every advance beyond the furthest point hitherto reached secures success for an expedition. They maintain that, as their expeditions always include a scientific staff which diligently observes and collects in all branches of enquiry, they cannot fail, because they must return with useful results, and so add to the sum of human knowledge.

Although we have given more or less full accounts of some of their former expeditions in previous numbers of this Magazine, we believe that it will be for the convenience of our readers if we take this opportunity, on the occasion of the departure of the Expedition of 1878, of passing briefly in review the previous achievements of the Swedes in the Arctic field of geographical research.

The first beginning of Swedish Arctic adventure was in 1837, when Professor Sven Loven undertook a voyage to western Spitzbergen in the schooner 'Enigheten,' commanded by the whaling captain P. Michelsen of Hammerfest. He returned in August of the same year with valuable collections of fossils and of the marine fauna of Spitzbergen. In the following year the French Government sent the corvette 'La Recherche' to Spitzbergen under command of Captain Favre, who visited Bel Sound and Magdalena Bay, and several Swedish men of science were on board.

Then there was an interval of twenty years, and it was not until 1857 that Dr. Otto Torell inaugurated his Polar voyages by a preliminary trip to Iceland. He was accompanied by Dr. N. Olson Gadde of Lund, the object being to study the Iceland glaciers and the *fauna* of the Icelandic fjords, with a view to determining the question of the Scandinavian glacial period. In the next year Dr. Torell equipped the Norwegian yacht 'Frithiof' for a scientific expedition to Spitzbergen. He sailed from Hammerfest on the 3rd of June 1758, accompanied by Dr. Nordenskiöld and Dr. Quennerstedt. On the 29th they reached Bel Sound, and their scientific labours, which were very successful, took them to Ice Fjord, Amsterdam Island, Clover Cliff and Magdalena Bay. They returned to Hammerfest on the 28th of August with large collections and many valuable observations.

The summer of 1859 was devoted by Dr. Torell to a voyage to Greenland. On this occasion he obtained marine animals by dredging at a depth of 500 metres, made a collection of geological specimens, and undertook a short excursion on the inland ice.

The second Swedish Expedition to Spitzbergen left Tromsö on the 7th of May 1861. The funds were supplied partly by the Government and partly by the munificence of Prince Oscar, the present King of Sweden, and others. Dr. Torell was again in command, and his companions were Dr. Nordenskiöld and Dr. Blomstrand as geologists; Drs. F. A. Smith, Malmgren, A. von Goës, and G. von Yhlen as zoologists and botanists; Drs. Duner and Chydenius as chemists and astronomers. The two vessels, called 'Æolus' and 'Magdalena' were commanded by naval officers, Lieuts. Lilliehöök and Kuylenstjerna. Carl Petersen, the veteran who accompanied Penny Kane and McClintock, embarked as dog driver. After touching at Bear Island, the expedition explored Hinlopen Strait, the Seven Islands, and North-east Land as far as Cape Platen, returning to Tromsö on the 27th of September. Several deep-sea soundings were obtained, one at a depth of 2700 metres; large scientific collections were made; many points were astronomically fixed; and important materials were secured for a more accurate knowledge of the marine currents. It was found quite impracticable to travel with dogs over the ice to the north of the Seven Islands.

In 1863 Dr. Quennerstedt undertook a voyage with Captain Castberg in a sealing brig, accompanied by Lieut. H. van Kervel and the Count Ehrensvörd of Gothenburg. The voyage extended from February to June 1863, and the party made a valuable collection in the seas round Jan Mayen Island.

In 1864 the third Swedish Expedition to Spitzbergen was fitted out. It consisted of the schooner 'Axel Thordsen,' and the scientific staff was composed of Drs. Nordenskiöld, Duner and Malmgren. Funds were granted by the Swedish diet, and supplemented by the liberality of Count Platen of Stockholm. They sailed from Tromsö on the 14th of June and returned

on the 13th of September. The principal object was to continue a triangulation which had been commenced in 1861, with a view to measuring an arc of the meridian at Spitzbergen. After an unsuccessful attempt to penetrate the ice to the eastward, Bel Sound and Horn Sound were visited, and the west coast as far as Prince Charles Foreland; diligent care being taken to make collections at every available point.

The fourth Swedish Expedition to Spitzbergen sailed in 1868 under Captain the Baron von Otter and Professor Nordenskiöld, the Government placing at their disposal the steamer 'Sophia,' completely equipped and provisioned; and funds were subscribed at Gothenburg by the Count Ehrensvörd and others. Drs. Smith, Malmgren and Holmgren went as zoologists; Drs. Fries and Berggren as botanists; Dr. Nauchkoff as mineralogist; Drs. Nyström and Lemström, of Helsingfors, as surgeons; and Lieut. Palander. The objects were to study the natural history and geography of Spitzbergen, and to ascertain how far north it was possible to take the steamer during the autumn. After touching at Bear Island, the ice prevented them from achieving their original object of reaching Gilies Land by the eastern side of Spitzbergen. A valuable collection of fossil plants was made on the shores of Ice Fjord, and deep-sea soundings were taken. Baron von Otter then attempted to reach the east coast of Greenland, but was stopped on the 80th meridian. Returning to Amsterdam Island the 'Sophia' made a renewed attempt to reach Gilies Land by the north, and visited the Seven Islands, and Hinlopen Strait. On the 19th of September one more attempt was made to penetrate due north, and the parallel of 81° 42′ N. was reached in the meridian of 17°, the highest latitude. On the 4th of October the 'Sophia' was surrounded by floating ice and in great danger, and on the 20th she returned to Tromsö.

In 1870 Professor Nordenskiöld made a voyage to Greenland, the object being that of obtaining a supply of dogs, with a view to making an attempt to penetrate north of Spitzbergen in a subsequent year with dog sledges. He was accompanied by Dr. Berggren as botanist; Dr. Oberg, as zoologist; and Dr. Nordström as geologist. The people of Gothenburg supplied the funds. The party landed at Godhavn on the 2nd of July, and made boat excursions on the Greenland coast between the parallels of 68° and 71 N. during the ten following weeks. Large natural history and ethnological collections were made, and the positions of twenty places were astronomically fixed. During July, Nordenskiöld and Berggren made their memorable sledge journey from the Auleitsivik Fjord over the inland ice. Professor Nordenskiöld offered a reward for the discovery of meteoric stones, and the Eskimos reported their existence at Ovifok on the coast of Disco. There were three enormous blocks and some smaller stones which the explorers brought home with them. In the following year, 1871, the Swedish Government sent the gun-boat 'Ingegird,' under Baron von Otter, and the brig 'Gladan,' under Captain M. von Krusenstjerna, to bring away the great meteorites from Ovifok; as well as to make scientific researches in Baffin's Bay and Davis Strait. Dr. Nyström was the zoologist, and Lieuts. von Holten and Brusewitz were appointed as seconds in command. The Swedish Academy also sent Dr. Fries as botanist; Dr. Lindahl as zoologist; and Dr. Nauchkoff as geologist; while the Danish mineralogist Steenstrup also joined the expedition. On the 16th of June the two vessels reached Godhavn, and were employed during the next fortnight in shipping the meteorites at Ovifok. Parties explored the shores of the Waigat and of the bay of Disco, and the 'Ingegird' afterwards went as far as Upernivik. Much valuable deep-sea sounding and dredging work was accomplished, and the expedition, with the three precious meteorites, returned to Sweden. One was given to the Swedish Academy of Sciences, the second to Nordenskiöld, and the third to the Danish Government as proprietor of the territory where they were found.

On the 4th of July 1872, an expedition sailed for Spitzbergen from Gothenburg, with the intention of wintering. The funds were mainly supplied, as for the two former expeditions, by the merchants of Gothenburg, chief among whom, as a munificent supporter of these useful voyages, was Mr. Oscar Dickson. The Government contributed two vessels. The postal steamer 'Polhem,' built for service in the Baltic ice during the winter, was one of the selected vessels, and Lieut. Palander was appointed to command her, with Dr. Envall as surgeon and photographer, and sixteen seamen of the royal navy. The scientific staff consisted of Professor Nordenskiöld, the Italian naval officer Eugenio Parent, Dr. Wijkander as astronomer and meteorologist, and Dr. Kjellman as botanist. The 'Polhem' was accompanied by the brig 'Gladan' under Lieuts. Krusenstjerna and Von Holten, with twenty-three men; and the merchant steamer 'Oncle Adam' under Captain Clase with twelve men. The plan was to build a house and observatories on one of the Seven Islands, which done the 'Gladan' and 'Oncle Adam' were to return to Sweden. In the following spring a party was to have set out due north, in sledges drawn by reindeer, these animals having been preferred to dogs, chiefly because they would be better adapted for food. But it was found impossible to penetrate the heavy ice, and the wintering station was established in Mossel Bay, on the north coast of Spitzbergen. Unfortunately the ice pressing on the shore prevented the two store ships from returning, all three ships had to winter, and the provisions intended for twenty-eight had to suffice for sixty-seven men. Another disaster was the escape of the reindeer which were never recovered. In the spring, as the heavy nature of the ice made it impossible to proceed northwards, Nordenskiöld resolved to explore the eastern part of the north-east land. On this sledging journey, conducted on the system of McClintock, the Swedes were absent from the ship for two months. They took no lime juice and had no scurvy, which is one out of many proofs that the absence of lime juice on the sledges was not the cause of the outbreak of scurvy in the late English expedition. Complete sets of scientific observations were taken, and most valuable collections were made; and on the 6th of August 1873 the 'Polhem' arrived safely at Tromsö.

One other expedition to Spitzbergen may be mentioned because, although the main object was commercial, its members did much good scientific work. Some Swedish merchants, having determined to work the phosphate beds discovered by Nordenskiöld at Sanriehook in Ice Fjord, employed Dr. Nathorst as

geologist, and Dr. Wilander as chemist, to report upon them. They arrived in Spitzbergen on the 17th of July 1870. Besides the researches which were the chief aim of the voyage, these two young *savans* made several excursions, one to Gipshook where they made a collection of fossil plants. On the 29th of August they left Spitzbergen on their return. The reports of Nathhorst and Wilander led to the formation of a Company to work the phosphates of Sanriehook, which sent two ships, with workmen, to Ice Fjord in the summer of 1872. Dr. Oberg, one of the members of the Greenland expedition in 1870, was engaged as geologist and chemist. The enterprise was abandoned in the end of the summer of 1872, but Oberg returned with a fine palæontological collection, chiefly from the triassic beds of Cape Thordsen, and the jurassic formation at Cape Boheman.

The Swedes have now been steadily and perseveringly prosecuting Arctic research for fourteen years, from 1858 to 1872, having sent no less than seven expeditions to Spitzbergen, and two to Greenland. Failure was unknown to them, because their objects were practical and attainable. Those objects were to secure scientific results, and to add to the sum of human knowledge; and some measure of success has rewarded every effort they have made. The Swedish museums contain the richest Arctic scientific collections in the world.

After his return from Spitzbergen in 1873 the indefatigable Nordenskiöld turned his attention to that most ancient field of Arctic research—the north-east, adding the practical object of opening the ports on the Siberian rivers to European commerce, to the main scientific aims of his undertakings. He was now a veteran explorer, having served in six Arctic expeditions, made two important spring sledging journeys, and experienced the rigours of a winter north of the 80th parallel; while his scientific attainments are of the highest order. He prepared for an entry upon this new field by an exhaustive study of all that is known of the north coast of Siberia, the rivers, and the sea to the northward; as well as of the work of all former adventurers in that direction. His first attempt was made in 1875, the cost of the expedition being defrayed by that munificent and enlightened promoter of Arctic discovery, Mr. Oscar Dickson, of Gothenburg. On the 8th of June, 1875, Professor Nordenskiöld sailed from Tromsö in the 'Proven,' accompanied by Drs. Kjellman and Lundström as botanists; Drs. Theel and Stuxberg as zoologists; and twelve Norwegian fishermen. The result of this voyage was most important. It established the fact that the Yenisei river can be reached by navigating the Sea of Kara at a certain period in the summer, and it thus opened a new continent to the commerce and civilising influence of Europe. After coasting Novaya Zemlya from Matotchkin Schar to the southward, the 'Proven' passed through the Jugar Strait, crossed the Sea of Kara, and, meeting ice in 75° 45′ N., steered southwards to the Siberian coast, and reached a point on the eastern side of the mouth of the Yenisei, which was named Dickson Harbour. On the return voyage the course was N.W. to Novaya Zemlya, near Cape Middendorff, and then homewards through the Matotchkin Schar. It was suggested on the return of the 'Proven' that her success was due to the unusual state of the ice in the season of 1875. It was determined to refute this theory by sending another expedition to the Yenisei in 1876, which, if successful, would prove that the navigation is practicable every year.

The expedition of 1876 was commanded by Professor Nordenskiöld, and fitted out at the expense of Mr. Oscar Dickson, of Gothenburg; and the wealthy Russian promoter of exploration, M. Alexander Siberiakoff. On this occasion a scientific party was sent by land to examine the valley of the Yenisei to report upon its navigability, and to join the ship at the mouth of the river. Nordenskiöld entrusted the command of this party to Professor Theel, of Upsala, under whom were two botanists, Dr. Brenner, of Helsingfors, and Dr. Arnoll, of Upsala; Dr. Trybom, of Upsala, as zoologist, and Dr. Sahlberg, of Helsingfors. The main expedition under Nordenskiöld himself sailed from Gothenburg in a steamer called the 'Ymer' of 400 tons. With him were Drs. Kjellman and Stuxberg, Captain Ericson, two junior officers, and eleven men. She had provisions for fourteen months, and fuel to enable her to steam at full speed for forty days.

The 'Ymer' sailed from Tromsö on the 25th of July 1876, and, passing through the Matotchkin Schar, entered the Sea of Kara on the 31st of July. But it was found to be covered with ice floes, and the 'Ymer' was stopped near the eastern entrance of the strait to wait for a favourable change. On the 5th of August the 'Ymer' shaped a course to the southward, much impeded by ice; but on the 12th the sea was clearer, and they reached the west coast of the Yalmal Peninsula. From that time the ice rapidly cleared away, and the 'Ymer' rounded the White Island without difficulty, crossed the Gulf of Ob, and arrived at the mouth of the Yenisei. The channel is divided into two by an island 30 miles long, which is not marked on the Russian charts, and Nordenskiöld named it Siberiakoff Island, in honour of one of the munificent promoters of the voyage. Nordenskiöld ascended the Yenisei to Mesenkin to meet the land party led by Dr. Theel, but it did not make its appearance, so the return voyage was commenced on the 1st of September. After touching at Port Dickson a course was shaped, as on the preceding voyage, direct for Cape Middendorff, and the sea was found to be perfectly clear of ice. The east coast of Novaya Zemlya was reached in 75° 30′ N., and Matotchkin Schar was passed without any interruption of the voyage. Regular soundings were taken throughout, and most precious collections were made in all branches of natural history. On the 22nd of September 1876 the expedition returned to Tromsö.*

The land expedition under Dr. Theel left Stockholm on the 29th of April 1876, and arrived at Yeniseisk on the 18th of June. Although Dr. Theel did not succeed in meeting the 'Ymer,' he and his companions examined the course of the great river, made valuable observations, and arranged for the transport of merchandise to Yeniseisk, which had been landed by Nordenskiöld. They returned to Stockholm on the

* *Expéditions Suédoises de* 1876 *au Yénissèi. I. Programme des Expéditions; Lettre de M. le Prof. Nordenskiöld à MM. Oscar Dickson et Alexandre Sibiriakoff. II. Rapport de M. Nordenskiöld sur l'Expédition (voie de mer). III. Rapport de M. Theel sur l'Expédition (voie de terre),* Traduit de Suédois par F. Schulthess (Upsal. 1877). 8vo. pp. 64.

9th of December 1876, and Dr. Theel submitted a most valuable report on the hydrography of the Yenisei, and on the physical geography, botany, and zoology of its basin.

The success of his two expeditions to the Yenisei led Professor Nordenskiöld to conceive the idea of extending geographical research round Cape Chelyuskin, the most northern point of Siberia and along the shores of Arctic Asia towards Behring Strait. The whole of the immense expanse of ocean to the north of Siberia, east of Cape Chelyuskin, stretching over 90 degrees of longitude, excepting short voyages in boats along parts of the coast, has never yet been ploughed by any keel. Nordenskiöld, therefore, proposed to investigate the geography, hydrography, and natural history of the North Polar Sea from the mouth of the Yenisei, if possible, as far as Behring Strait.

The experience of his voyages in 1875 and 1876 leads to the conclusion that Dickson's Harbour may be reached by the middle of August. From thence the discoveries will commence, for there is scarcely any reliable information regarding the hydrography, between the mouth of the Yenisei and Cape Chelyuskin. But there is reason to hope that a well-equipped steamer will be able to penetrate far beyond the point reached by the small Russian exploring boats. Only three boat voyages have ever been attempted in this part of the Kara Sea, all under the leadership of the Mates Manin and Sterlegoff. The first was in a sloop 70 feet long, which was built at Tobolsk and transported to the Yenisei. In 1738 Manin penetrated in her as far as 72° 53′ N. off the mouth of that river. In the next year a new attempt was made, but without getting any further; but in 1750 the Russians succeeded in navigating as far as 75° 15′ N., when they returned on the 2nd of September, owing to the lateness of the season. There are also two statements regarding the state of the ice on this coast. On August 25th, 1843, Middendorff reached the coast at Taimur Bay, 75° 40′ N., travelling by land, and reported the sea to be 'free of ice as far as the eye could reach from the chain of heights along the coast." The land from Taimur to Cape Chelyuskin was mapped by means of sledge journeys led by Mate Chelyuskin in 1742, who discovered the northenmost point of Asia in May of that year, the sea being then, of course, covered with ice. On September 1st, 1736, Prontschischen, with a coasting vessel from the east, very nearly reached the north point of Asia in 77° 34′ N.; and in recent years Norwegian walrus hunters, during late autumn, have repeatedly sailed far to the eastward from the north point of Novaya Zemlya in 77° N. without meeting any ice. Professor Nordenskiöld, after a careful consideration of all the evidence, believes that during September he will find open water all along the coast to Cape Chelyuskin. The enormous masses of warm water from the rivers Ob, Irtish, and Yenisei, pouring into the ocean after being heated during the month of August, must drive the ice off the coast and leave a navigable channel. The influence which the rotation of the earth exercises on streams, in high latitudes, which run in the direction of the meridian, gives them an easterly bend, so that the volume of water from the Ob and Yenisei would be confined, as in a river bed, until it reaches Cape Chelyuskin, and would then flow off to the eastward.

As regards the navigability of the ocean to the eastward of Cape Chelyuskin, in the direction of the Lena river, our knowledge is mainly founded on the observations of the expeditions sent by the Russian Government to survey the northern part of Asia, before the middle of the last century. In his Memorial on the subject, Professor Nordenskiöld pays a just tribute of praise to the gallantry and skill of these Russian explorers, who did so much with such small means. They started from Yakutsk on the banks of the Lena, upwards of 900 miles from its mouth, where their vessels were built. The first expedition was despatched in 1735 under the command of Lieut. Prontschicheff. He sailed down the Lena to its mouth, and on the 7th of September was off the mouth of the Olonek, where he wintered. Next year he made good progress as far as 77° 29′ N., whence he was compelled to return by compact masses of ice, in the middle of September, and he died of scurvy, together with his young wife who had accompanied him, during the return voyage. A second expedition under Lieut. Lapter left the Lena in 1739, and on September 2nd was within sixty miles of Cape Chelyuskin, whence they returned owing to the masses of drift ice, wintering in Chatanga Bay. With this ended the voyages to the westward off the Lena. No one had succeeded in forcing his way in a vessel from the Lena to the Yenisei. But the vessels were wholly unsuited to the work, while Prontschicheff and Lapter, during September, in 1736 and 1739, had penetrated to within a few miles of Cape Chelyuskin. Professor Nordenskiöld deduces from these voyages the conclusion that in the above years no serious obstacles would have been met with in rounding Cape Chelyuskin by a properly equipped steamer.

From the Lena to Behring Straits there are much more numerous and complete observations. The most remarkable voyage in this direction was made by the Cossack Deschner, and a record of it was only accidentally preserved owing to a law suit. We gave some account of this remarkable circumstance in a former number, and it will be sufficient here to say that Deschner left the Kolyma river, with a fleet of seven small vessels, on the 1st of July, 1648, that three of these reached Tschutskoynos through open water, and that Deschner continued the voyage along the east coast of Kamskatka and reached Anadyr in October. The year following Staduschin sailed for seven days eastward from the Kolyma in an open sea. Several voyages were made northwards from the Siberian rivers, after the founding of Nijni Kolymsk by Michael Staduschin in 1644, in consequence of the reports among the natives that there were large inhabited islands, rich in walrus tusks and mammoth ivory, away north in the Siberian Polar sea. These reports were finally verified by the discovery of the New Siberia Islands and Wrangel Land. The expeditions failed, not because of the ice, but because the ill-built vessels, sewn together with willows and caulked with moss, were quite unseaworthy. The explorers preferred to reach the islands by sledging over the ice, and they were often visited by hunters for mammoth ivory. The New Siberian Islands were afterwards surveyed by Hadenström, 1809-1811, and Lieut. Anjou in 1823. The report is that the sea between the Siberian coast and the islands is pretty free from ice every summer.

Several attempts have been made to navigate the sea from the Lena eastward to the Kolyma. In 1735 Lieut. Lassinius left the most easterly mouth of the Lena on the 21st of August, and wintered at a spot some 50 miles to the eastward, where he and most of his men died of scurvy. In 1736 Lapter made a similar attempt, but was stopped by drift ice in August, and returned at the very time when he ought to have been commencing his voyage. He undertook another voyage in 1739, when he reached the mouth of the Indigirka and wintered there. Next year he continued his voyage to beyond the Kolyma, where he was stopped by drift ice on the 26th of September, and wintered at Nijni Kolymsk. It must be remembered that the river boats in which these attempts were made, were quite unfit for sea navigation, and it is only surprising that the explorers should have ventured to leave the mouths of the rivers in them.

It remains to glance at the attempts that have been made to penetrate westward from Behring Straits. Behring himself only got as far as 172° W. along the north coast of Asia. Captain Cook reached the 180th degree of longitude on the 29th of August, 1778. In 1855 the American Captain Rodgers reached to 176° E., the longitude of Cape Jækæn in open water. In 1867 Captain Long, in a whaler, got as far as 170° E.; and in 1876 a Russian expedition was sent out to endeavour to reach Wrangel Land from Behring Straits, but was stopped by the ice.

The general report, according to information collected by M. Siberiakoff, is that the ice is driven from the coast during the summer by southerly winds and that it returns when northerly winds set in. Professor Nordenskiöld is of opinion, from the evidence before him, that the New Siberian Islands and Wrangel Land only form links in an extensive group of islands running parallel with the north coast of Siberia. This chain, on the one hand, keeps the ice of the intermediate channel from drifting away altogether and favours the formation of ice during the winter; and on the other, it protects the coast from the polar ice formed to the north of the islands. He, therefore, reckons on a tolerably open sea during the autumn.

From the mouth of the Yenesei to the point reached by Captain Long in 170° E., the ocean north of Siberia has never been navigated by a proper sea-going vessel, and the frail boats which have entered it never ventured far from the coast. An open sea with a fresh breeze was more destructive to them than a sea covered with drift ice. Nordenskiöld, therefore, considers it probable that a well-equipped steamer might force a passage this way in a few days, and thus not only solve a geographical problem of several centuries standing, but also survey a hitherto almost unknown sea of enormous extent, and bring back scientific results of great value.*

The success of the late English Arctic Expedition, and the invaluable scientific results derived from it, have quite recently shown the importance and utility of such enterprises. By the north-east route the Swedes will secure equally valuable results. At present we have no knowledge of the vegetable and animal life (consisting of survivals from the glacial period) in the sea which washes the north coast of Siberia; yet a complete and certain knowledge of what animal types are of glacial and what of Atlantic origin is of the greatest importance, not only for zoology and for a knowledge of the geographical distribution of animals, but also as regards the geology of Scandinavia. There is still much that is enigmatical with respect to a number of circumstances connected with the mammoth period of Siberia, which perhaps was contemporaneous with our glacial period, and new light will doubtless be thrown upon this interesting point. Our knowledge of the animal and vegetable types which lived at the same time as the mammoth is exceedingly incomplete, and this question calls for further investigation. An abundant harvest of results will certainly be reaped in the geological field. But equally important will be the meteorological and tidal observations, and those in terrestrial magnetism; nor will the study of the existing fauna and flora, and of the ethnology of the region to be explored, prove less valuable. The scientific results of the expedition will certainly prove most important.

This great geographical enterprise is due to the munificent public spirit of Mr. Oscar Dickson, of Gothenburg, to whom Arctic research already owes so much. Out of the 20,000*l.* which the expedition has cost, he contributed 12,000*l.*, while 3000*l.* were voted by the Swedish Government, 2500*l.* were given by the King of Sweden, and a like sum by M. Alexander Siberiakoff. Mr. Dickson bought the 'Vega,' a steam whaler, built at Bremen, for 8000*l.* She is of teak, and well adapted for the service. She was fitted out at Carlscrona, and proceeded thence to Copenhagen to take in provisions; the preserved meats being supplied by Wikström, of Stockholm, and Beauvais, of Copenhagen. The 'Vega' then went to Gothenburg, from which port she took her final departure. Some account of her outfit, and of the objects of the voyage, by Captain Palander, will be found in our number for November 1877, p. 297.

The names of the officers and scientific staff of the 'Vega' are:—

Professor Nordenskiöld—*Leader of the Expedition.*
Captain Palander—*Commander of the 'Vega.'*
Dr. F. Kjellman, of Upsala,
Dr. A. Stuxberg,
Dr. E. Almgvist,
} *Scientific Staff.*
Lieut. Andreas Hovgaard—*Danish Navy.*
Lieut. E. Bruskewitz—*Swedish Navy.*
Lieut. Giacomo Bove—*Italian Navy.*
Lieut. Nordgvist—*A Finnish Officer and Geologist.*

The crew consists of eighteen seamen, selected from 200 eager volunteers, and three hunters (*fangstmän*) to be taken on board at Tromsö.

The 'Vega' is to be accompanied as far as the River Lena by a small steamer called the 'Lena' of 100 tons, commanded by Captain Johannesen. She belongs to M. Siberiakoff, and is destined for use on the River Lena where his property is situated; but during the voyage she will be useful in many ways as a tender to the 'Vega.' Another steamer also goes out with a cargo as far as the Yenisei, called the 'Fraser,' and she will tow the 'Express,' a sailing vessel, also laden with merchandise. This is a mercantile adventure of M. Siberiakoff; and its

* This review of all that is now known of the navigation of the Siberian Polar Sea is mainly taken from Professor Nordenskiöld's lucid statement to the King of Sweden.—*Memorial concerning the Arctic Expedition of* 1878, by A. E. Nordenskiöld (Translation). (Göteborg 1877). 8vo., pp. 30.

success will doubtless lead to a regular trade with the Yenisei. M. Sidoroff, for instance, who owns large graphite mines near that river, is only waiting for assured success to commence the despatch of vessels on his own account. The 'Vega' will fill up with coal at Port Dickson from the 'Fraser.'

The expedition is provisioned and equipped by the light of the best modern experience, and is supplied with every appliance to secure good ventilation, and the health of officers and men. It is likely that, especially if the progress of the ship is checked by ice, there will be much sledge travelling. For instance, in the event of the 'Vega' being unable to round Cape Chelyuskin in the first season, and being obliged to winter anywhere between that point and the mouth of the Yenisei, sledging parties will explore that most northern promontory of Asia during the following spring. The islands to the north of Siberia will also be explored by means of sledges. Professor Nordenskiöld has himself had experience as a sledge traveller, and he is intimately acquainted with all the details of sledge equipment. While taking every useful precaution against scurvy, he knows from experience—which is the only safe guide—that the absence of lime juice on sledges is not the cause of an outbreak, and that the conclusions of the English Scurvy Committee were absurd, and opposed to all the reliable evidence that was taken. We believe, indeed, that he and Captain Palander, as well as the surgeon of the 'Polhem,' drew up a statement of their experiences on this point, which, however, did not appear in the one-sided Scurvy Blue Book. The Swedish explorers will not take ignorant and presumptuous theorists as their guides, but will rely on their own tried experience and on that of the English Arctic sledge travellers. Besides lime juice, the 'Vega' is supplied with sour-crout and the anti-scorbutic berries of Norway, preserved in casks.

The moment the 'Vega' passes beyond Port Dickson, she crosses the threshold of the unknown region, and the success of the expedition is certain. The extent of that success depends on circumstances over which man can have no control; but most assuredly all that bravery, gallant endeavour, determination and intelligent skill can effect, will be done by the Swedish explorers; and no branch of scientific enquiry will be overlooked by them. The steady and persevering way in which, year by year, they have stuck manfully to their work must give the utmost confidence in their present exertions, and if any men can do so, they will command success.

The 'Vega' sailed from Gothenburg on the 4th of July 1878; and Professor Nordenskiöld followed a few days afterwards, travelling by way of Trondjem, and joining her at Tromsö. The Swedes have now fairly started to do their share, and a large and important share it is, in the solution of the greatest geographical problem of the age—the exploration of the vast unknown region round the Pole. They take with them the warm sympathy and good wishes of the geographers of all nations; and we sincerely trust that they will return to their homes, crowned with the laurels which they will have so well and gallantly earned. All success and prosperity to the Swedish Arctic Expedition!

THE VILAYET OF THE ISLANDS OF THE WHITE SEA.*

(Continued from p. 171 of our last number.)

V.

I.—TOPOGRAPHICAL AND GENERAL NOTES.

THIS vilayet falls into five sanjaks, with twelve kazas and twenty-two nahies, as follows:—

1. *The Sanjak of Bigha, with the Kazas Bigha, Lapsaki, Aivajik, Eznič, Tenedos, and Lemnos.*

The capital is Chanak Kalä, or Kaläi Sultanié, the seat of the General Governor, of the military commandant of the fortresses and fort artillery troops in the straits and the islands of the White Sea, of a postal and international telegraph office, a quarantine station, a lighthouse agency, and the printing office of the vilayet. Chanak Kalä, which has upwards of 6000 inhabitants, half Muhammadan half non-Muhammadan, is a transit port for wood, gall apples, wool, and wheat, which articles are brought from the interior; it also exports large quantities of pottery ware, and carries on some shipbuilding (vessels of up to 60 tons). Four or five tug boats are stationed in the harbour, and are employed in towing sailing ships through the straits. Vice-Consuls of Austro-Hungary, France, England, Russia, Italy, Spain, Holland, Belgium, Denmark, America, and Greece are located at Chanak Kalä. Not far from Kum Kalä the graves of Achilles, Patroclus, and Ajax are shown.

The chief places in the kazas are, on the mainland, Bigha, Lampsaki (anc. Lampsacus), in a fine wine-growing district, Aivajik, and Eznié; other places of note are Bunarbashi, on the site of Troy; Eski-Stambul, on the ruins of Alexandria-Troas and Yeni-shehr.

The most important islands of this sanjak are:—Tenedos (Bozje-Adassi), a small mountainous island, which carries on traffic in muscatel wine and oil. The chief town, Tinedo, lies with its port on the north-east point, protected by a citadel and fort. Tenedos has remained in the hands of the Turks since 1657, and was their most important naval station at the time of the so-called Greek war of independence. An Austrian and a French vice-consulate are stationed at Tenedos. The citadel contains besides accommodation for the garrison, a grain magazine, two wells, and a large powder depôt, with 500 to 600 full casks, which were stored here in 1807-8, when the Russians mastered the place. The town, which lies below the citadel, and which has about 800 houses and booths, was destroyed by fire in July 1874.

Lemnos (Stalimene, Limni-Adassi) is essentially of volcanic origin, whence its numerous volcanic products, the therapeutic *terra sigillata*, or terra Lemnia, Meerschaum, &c., and its hot wells: the volcano of Mosychlos which has been dormant for more than 2000 years, passes for the old dwelling of the Kephästos. Lemnos is almost entirely mountainous and thinly wooded, but well adapted for grain and wine. The island produces about 12 million kilos. of sea salt every year. On the site of the old town of

* *The Vilayet of the Islands of the White Sea.* By A. Ritter zur Helle von Samo. (Translated in Abstract).

Myrnia, on its west coast, stands the present Limni, with a good port, a castle, and about 1000 inhabitants. (For a description of Lemnos see Conze's *Reise auf den Inseln des Thrazischen Meeres:* 1860.) Choisseul Gouffier estimated the number of inhabitants in Lemnos at 30,000.

Samothraki (Semadrek, Semendrek) consists for the most part of a mountain mass running westward (the Saoki of the ancients), the highest point of which, the peak now called Phengar, rises higher above the sea than any point on the surrounding coasts or islands. According to Homer, Neptune beheld the fight between the Greeks and Trojans from this mountain. On the north coast of Samothraki the town of the same name once stood, and extensive ruins (Paläopolis) still remain. Pliny called the island "the most deficient in harbours." It has only one village called Chora, about six miles distant from the sea, and has about 2500 inhabitants. Archæological explorations and excavations have been frequently made on Samothraki in recent years; in 1863, by M. Champoiseau, then French Consul in Adrianople; in 1866, by MM. Deville and Cocard, members of the French school of Athens; and in the spring of 1873 by Herr G. Lang, commander of the Austrian Frigate 'Zrinyi.'

Imbros (Imrus) has, according to Choisseul Gouffier, 3000 inhabitants in four villages; rich coal beds and fisheries.

The island of Thasos (vulg. Tashos), which is under Egyptian rule, has richly-wooded mountains, from which gold and marble were obtained in ancient times: the wine of the island was also famous. The chief town of the same name, of which extensive ruins still remain, lay in the north coast on the site of the present landing place. From the landing place of Liman or Panagia four hours' ride takes one to Theologo, the largest town of the island in the midst of its southern half: on the way thither Potamia is passed. The two highest summits of the island are Ypsarion and Elias.

The island has about 800 houses, with 2000 people, in 9 villages. Grain, wheat, and wine are cultivated; timber for ship-building, oil, honey and wax are exported. The people of Thasos did not take part in the Greek revolution (See Hassenbach *De Insula Thaso*, 1838; and Conze's *Reise* 1860).

2.—*Sanjak, Midillü (Metilino) with the Kaza Molyvo.*

Mytilene (Heimerte, Lasia, Pelasgia, Aegira, Aethiope, Pentapolis, Macaria, Issa, Metilino, Lesbos, Midillü-Adassi) has the capital Mytilene or Kastro.

The town had two ports, one on the north side and one on the south side, both protected by long stone breakwaters, and these were united by a canal which passed straight through the town. This canal has now quite disappeared, the northern port has been abandoned, and the southern is only approachable by small vessels. The Acropolis, on a hill, which falls steeply to the sea north-east of the town, is still recognisable, as is the outline of the theatre on the slope of a hill which rises west of the town. Towards the northern harbour lies the Turkish quarters with the government houses: between this quarter and the citadel are dwellings of both religionists. The castle stands on the site of the old Acropolis, and commands the harbour of the town. In Mytilene there are vice-consulates of Austro-Hungary, Russia, France, England, Italy and Holland.

The island was famed in ancient times for its many towns. Pliny enumerates eight. Scylax and Pomponius Mela only five; hence the name *pentapolis*. In the history of the island it appears to have been independent for the last time in the middle of the 14th century, under the Genoese family of Gatteluzzi, till it fell, in 1462, under the rule of the Turks. Mytilene was devastated in 1755 by earthquake, and in the beginning of the 19th century by a conflagration. In 1821 the island was a station of the Turkish fleet. It is crossed by several mountain ranges, among which are Lepetymnos (Gelia) on the north, and Olympos (now Hagios Ilias) on the south. Between lie wide fertile plains, with fine woods, fields and vineyards; wheat, oil, wine, and southern fruits are the chief products of the island. The mountains also yield fine marble. The bays of Jero, in the south-east, and Kalloni on the south, penetrate far into the interior, and present the appearance of large lakes. Besides Mytilene or Kastro there are two dilapidated strongholds in the island, those of Molyvo and Sigri.

(For particular accounts of Mytilene see Bonton's *Mémoire sur Mételin*, 1856; Newton's *Travels in the Levant*, I., 1865; Conze's *Reise auf den Inseln*, 1865; and the Appendix to Dr. Scherzer's *Smyrna*, 1873.)

3.—*The Sanjak Sakyss (Chios), with the Kazas Ipsara and Kosimada (Spalmadores).*

The island of Chios (Sakyss, Ophiusa, Pityusa, Makris) has four harbours, the best of which is that of Delphino (Kato Phana), on the south coast. It is covered with mountains, among which Mount Elias is the highest, and has very fertile soil and excellent climate. It was famed in ancient times for its wine and figs, and still carries on a very considerable trade in wine, honey, wax, oil, cotton, silk, cheese, fruits, and excellent mastic. The mastic (Sakys) has given Chios its Turkish name, Sakys-adassi. As a rule, the export of mastic gum varies between 50,000 and 60,000 okka annually. The trading fleet of Chios numbers about 400-500 vessels: in the wharfs on the north side of the Turkish quarter of the town of Chios, three-masted vessels of 40,000 kilos burden are built. The women of Chios are noted for their beauty and cheerfulness, the men for their guileless character: an old proverb of the Archipelago says, "A wise Chiote is as rare as a green horse."

The capital, anciently called Chios, now known as Kastro, lies on the east coast of the island, and has about 13,000 inhabitants. It is inhabited for the most part by Greeks and Franks, but at the north-west end is the Turkish town, the old fortress, enclosed by Genoese walls (about 500 houses, with four mosques, and two gates), with a battery at the entrance to the port, and about 150 old guns of various calibre.

Before the Greek war of independence the island of Chios had about 600 villages and sixty-six churches. Among the nine convents of Chios the most important is that of Nea-Moni, in the centre of the island, situated in a lovely plain: it had more than 400 monks before the insurrection, but that number has dwindled down to about sixty or eighty: the

lands of this convent include about a sixth of the whole island. Vice-consuls of Austro-Hungary, France, England, Belgium, Germany, Italy, Portugal, Sweden and Norway, Holland, and Greece are resident in Chios. A political memoir by Prince Gortshakoff (1867) gives the island 75,000 inhabitants, 586 churches, and 450 trading vessels, with 5000 sailors. According to the report by the Governor of the island (1875) it has 70,000 inhabitants, of whom 2000 to 3800 are Muhammadans.

Ipsara (Osara, Psyra) a small, rocky island, had, it is said, more than 90,000 inhabitants before the Greek war of independence, and formed at that time a chief station of the Greek naval power, with Hydra and Spezzia, but was conquered in 1824 by the Turks.

4.—*The Sanjak Istankŏi (Kos) with the Kaza Kalimnos.*

The island of Kos (Stanchio, Ko, Caris, Meropis, Meropiá, Istankŏi) was famed in ancient times for its excellent wine, and from its splendid Temple of Asclepios, which was raised in the vicinity of Kos, and contained the painting of the Anadyomene of Apelles; it is the birthplace of physician Hippocrates, of the poet Philetes, and of the painter Apelles. Kos was subjected to the Turks after the fall of Rhodes. It was the central point of the Turkish operations against Samos in the Greek war of idependence, though the islanders took no part in the contest. The capital, Kos, lies on the north coast at the foot of the hill; it has a castle with sixty old guns. Vice-consuls of Austro-Hungary, Holland, Russia, England, and Greece are residents.

Kalymnos (Kalmios, Claros, Kalinna) has two ports on its south coast. Injirily Adassi (the fig island, Nisyros) has a bay on its northern side but no harbour.

Astropalea (Astrobalia, Pyrrha, Pylea, Theon-Trapeza) has a good harbour, fertile soil, and little cultivation.

Leros (Lerios, Leria) has three good ports, the best of which is on the east coast of Terraco Bay, at the entrance of which lies the small island of Lepida. The former citadel was destroyed by the Venetian Toscolo in 1648.

Patmos (Patinos, Palmosa, Patmo) "where the apostle John wrote his Revelation in the year '95," is fertile and has convenient harbours, among which that of the town of Patmo, opposite Naxos, is said to be the best in the archipelago. Besides the great convent founded in 1088, there is a school which is much frequented by the people of the archipelago.

Nicaria (Icaria) has no harbour; only landing places for small boats. The inhabitants of this island live by the timber traffic with Chios of Scalanova; they also sell sheep and wine, honey and wax, and are very expert fishers.

5.—*The Sanjak Rhodus, with the Kazas Synü, Meis, and Karpathos.*

At the time of the Emperor Vespasian the island of Rhodes (ancient Opiusa, Delchinis, Aethrea, Trinacria, Corymbia, Pacessa, Maracia, and Atabyria) had lost the independent position which it enjoyed as the Doric Republic, under Alexander, and at the beginning of the Roman Government. When it had raised the distrust of the Romans they took from it first its possessions in Caria and Lydia and then its freedom, and it was made the central point of a Roman province of the united coastal islands. In the middle ages, indeed, Rhodes again attained some importance. In 651 it was conquered by the Khalif Moawijah; the crusades brought it again into the hands of the Christians; and after the loss of Palestine it was made over, in 1309, to the Knights of St. John. The order was compelled to leave the island in 1525, when it could no longer resist the attack of Sultan Suleiman, and transplanted itself to Malta.

The *Univers* enumerates 44 villages in Rhodes, besides its capital and Lindos. Last century the population is said to have been 80,000. Michaud and Poujoulat quote a census of 16,000. Savary (*Lettres sur le Grece*) enumerates besides Rhodes and Lindos, five Muhammadan villages, and 46 inhabited by Greeks; in all 75,000 families, of which 4,700 were Muhammadan, 2,500 Greeks, and 300 Jewish. The Governor of Rhodes gave me (1874) the total of 28,000 inhabitants, including 6000 Turks, 2000 Jews, and 20,090 Christians.

The island is at present in a very neglected condition: there is not a single carriage road, the woods have been destroyed, and the productiveness of the soil seems to have diminished. The harvest of figs, olives, and fruits is comparatively small: grapes alone maintain their old repute. About 400,000 lbs. of raisins are exported annually, besides silk and sesame.

The capital, Rhodes, is amphitheatrically built, and has a harbour. In ancient times it was famous for its Colossus, and for the school founded here in 224 B.C. by Aeschines. The fortifications are in ruins, as is also the Cathedral of the Knights of St. John, which was destroyed by the earthquake of 1863, after it had been converted into a mosque. The old Knights Street and the remains of the great priory alone recall the residence of the order. Like Pera for Constantinople, Neochori, on the north-west, is the fortress of Rhodes. South-west of the town, 8 to 10 miles distant, lie the ruins of old Rhodes.

Rhodes is in direct telegraphic communication with Candia and by Mermerjé with Smyrna, Syria, and Egypt. Vice-consuls of Austria, England, France, Russia, Holland, and Greece, are resident in Rhodes; and there is further a Dutch Vice-consulate in the dependent island of Karpathos. For fuller particulars about Rhodes the reader is referred to Coronelli's *Isola di Rhodi*, Venezia 1688:—Rost's *Hist. Arch. Fragment* 1824; C. Maunert's *Geogr. des Griechen*, Band III., Nümberg 1802; Col. Rottier, *Description des Monuments de Rhodus*, Bruxelles 1820; Cf. Meursius, *Rhodus*; Dapper's *Description de l'Archipel*; M. de Marcellas' *Souvenirs de l'Orient*; Revue des deux Mondes 1844, p. 809; Savary's *Lettres sur la Grece*; Michaud et Poujoulaet, *Corr. d'Orient*; Demosth. *Orat. de Rhodiorum libertate coll. Didot*, xvi., p. 100; Hammer's *Die Insel Rhodus*, Brunswick 1861.

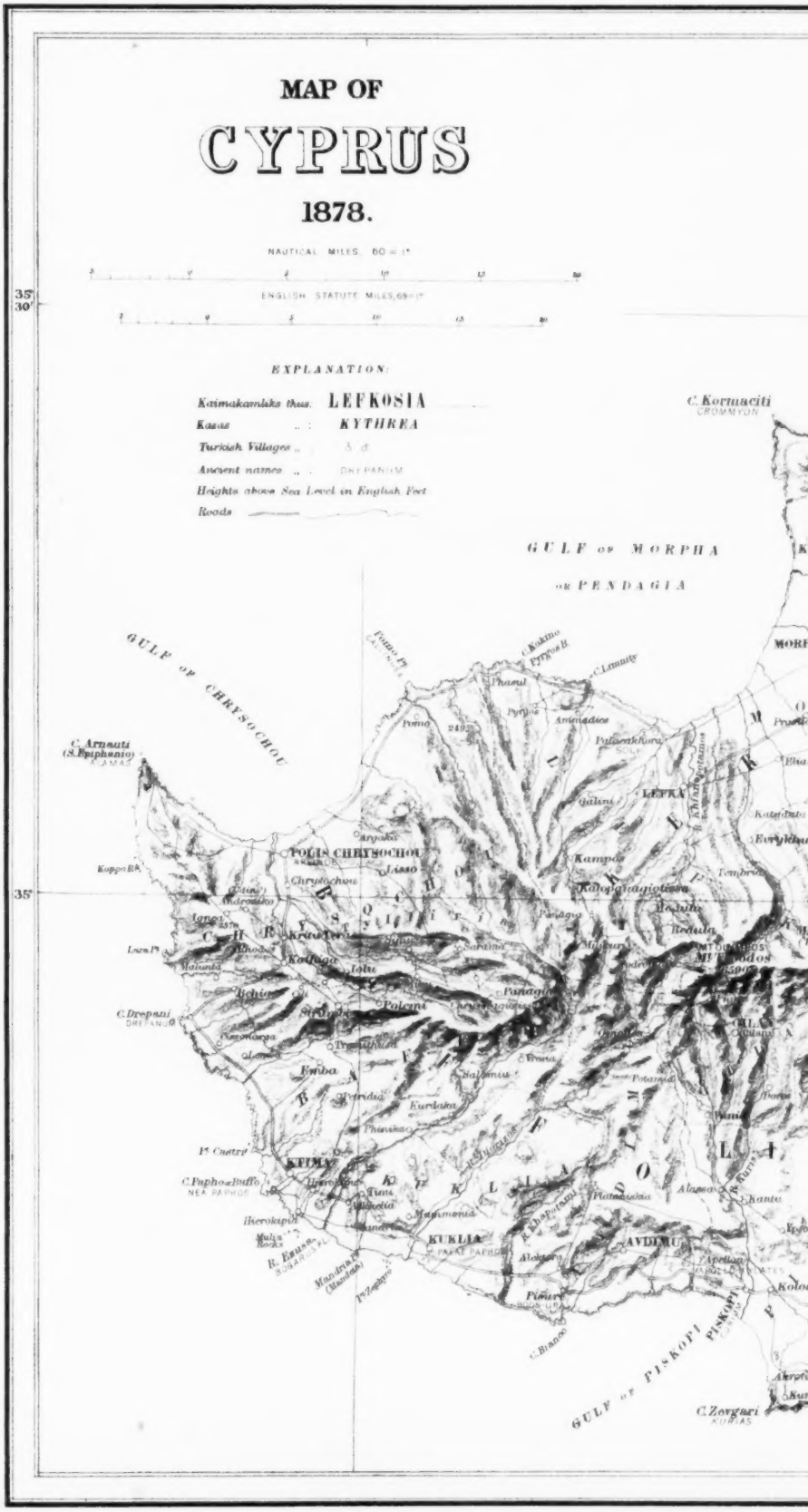
II.—NOTES ON THE FINANCES, PUBLIC INSTRUCTION, NAVIGATION, PRODUCTIONS OF THE SOIL, TRADE, CATTLE REARING, FISHERIES, &c.

Finance.—The resources of the vilayet are derived from a property tax (verghi), a military tax (Bedelie

MAP OF

CYPRUS

1878.



33°
BERENIA
Kyrenia
KYTHREA
MORPHA
LEFKOSIA
(Nikosia)
Hierolakko
Phlia
Phlin
Chrysoliu
Pleasa
Peristerona
Mesaio
Nectari
Trimithusa
Lakatamia
Strovilo
Pidias
Mandra
Ashéri
VATILI
Kaimaki
Kuklia
Lysai
Tremithussa
Atpi-ma
Perapha
Lorighio
Largana
Vavokion
Arodapa
Lavadia
LARNAKA
La Scala (Marina)
CITIUM
Vromolossa
Tudes Pt
Arpera
Khandria
Maxuto
C. GIL. TADES
LITHODONDA
Marwé
Pampistrasseno
Pantakhino
Dades Pt
Vasula
Akherondo
Mesa
Iernasenna
Kolossi
LIMASOL
AKROTERI BAY
Akrotiri
Kuri
C. Gatto
33°

33°

34°

C. S. Andreas
DINARETUM

Khelonia I.

Old Cable to Latakia

Monastery Pt

Pedramo Reach

C. Plaketi

KARPAS
Rhizo Karpasso

Pyrrha Pt

Agios Andronikos

Galatheia

Monagri

C. Elaea

Lapathos

Trikomo

FAMAGUSTA BAY,
BAY OF SALAMIS

Agios Sergis

SALAMIS CONSTANTIA
ANCIENT PORT

FAMAGUSTA
ANMOCHOSTOS

Varosia

Derigneia

Kaloperida

Lysi

Akheridu

Skylura

Trikomo

Arpera

Dades Pt

C. Citi
DADES

Agios Georgios Pt

C. Greco
PEDALION

C. Pyla
THRONI

LARNAKA
La Scala (Marina)
CITIUM

Vrondoskipos

Aradippo

Livadia

Orounda

Voroklini

Pyla

Skarinou

Kiti

Tersephani

Lefkara

Pano Lefkara

Kato Lefkara

Alethrikon

Lysos

Tremithousa
CREMITHUS

Kalavasos

Tekke

Zygi

Kivisili

Kophinou

Arsos

Akrotiri

Kuri

C. Gatto

C. Zevgari
KURIAS

AKROTERI BAY

GULF OF PISKOPI

LIMASOL

Kolossi

Episkopi

Avdemu

Asseliou
DATES

Trimithusa

Lania

Ayios Amvrosios

Ayios Epiktitos

Ayios Georgios

Ayios Antonios

Ayios Ioannis

Ayios Theodoros

Ayios Nikolaos

Ayios Mamas

Ayios Sozomenos

Ayios Ioannis

Ayios Ermogenis

Ayios Tychonas

Ayios Konstantinos

Ayios Epiktitos

Ayios Georgios

Ayios Ioannis

i Askierié), tithes (Aschar), customs dues (Gümrük), and other dues on salt, stamps, drinks, tobacco, &c. The official returns of the revenue (Váridat) and of the expenditure (Mas-sarifát) of the government of the vilayet for the year 1292 (1875) give the following totals:—Revenue in piastres, 23,517,176; expenditure, 5,824,544.

Public Instruction.—The advancement of education has received very considerable attention in recent years throughout the Turkish Empire. Every village is supposed to have an elementary school (Sübian mikteb) for boys and girls, and every provincial and district town a middle school (Rüshdié mikteb), in which Persian and Arabic are taught as well as Turkish. A report on the Rüshdié schools opened in the vilayet in 1876 gave their number as twelve—one in Kalä-Sultanie (with 75 scholars), one in Lapsaki (28), one in Eznié (25), one in Bigha (30), one in Aivajik (20), one in Baba-Kalässi (15), one in Tenedos (22), one in Lemnos (40), one in Mytilene (51), one in Chios (35), one in Istanchio (20), and one in Rhodes (37). The number of Sübian schools in 1876 was 138.

Along with each of the larger mosques there is also a theological school (Medresse), partly for the theological partly for the juridical instruction of youths, who fill up the priestly ranks.

Navigation, production and trade.—Between the four corner points of Constantinople, Syra, Smyrna, and Larnaka (in Cyprus) there are, within the limits of the vilayet of the Islands of the White Sea, only Chanak Kalä (Dardanelles), Mytilene, Chios, and Rhodes, as points of any considerable account in trade and navigation. Smyrna, which has gradually raised itself to the position of the centre of traffic for the territory of the coasts and islands of the White Sea, belongs to the vilayet of Aïdin, and commands the trade of the whole region from Pergamos, Ushak, and Kintakia, on the north, to Konia and the Taurus on the south, as well as far into the interior of the continent. The history of the trade of Smyrna and the description of its present condition have already been fully treated of by Consul Scherzer in a work published at Smyrna, 1873.

Official returns give the following figures of the movement of vessels through the Dardanelles in 1875-76. Coming from Constantinople, 471 post steamers (Turkish, French, Austrian, Italian, and Russian), 1011 trading steamers (811 English), and 5131 sailing vessels: total, 6613 ships. Going through the Straits to Constantinople: 1667 steamers (803 English), 2895 sailing vessels: total, 4562 ships.

The cadastral survey of the vilayet of the islands, begun in 1874 in the Sanjak of Bigha, gives the following results of cultivated and uncultivated land in that portion of the province, by donums* (900=1 German sq. m. and 21·26 Eng. sq. m.) Uncultivated 763,686, cultivated, 1,587,274: total, 2,350,960.

* A donum of arable land costs, according to its position, from 1 to 3 Turkish lira, or from 9 to 27 florins. Far from the coast or from settlements the price falls to 25-100 piastres (2½ to 9⅒ fl.)

CYPRUS.

IN our last number we published the first part of an article on the "Vilayet of the White (Ægæan) Sea," which contains a statement (p. 168) giving the political divisions and population of the island of Cyprus. We now proceed to supplement this by a brief description of our newly-acquired possession. The island is situated between the parallels of 34° 30′ and 35° 45′ N. lat., and 32° 15′ and 34° 40′ E. long., and is the easternmost island of the Mediterranean, lying off the coast of Syria. The greater part of the island is an irregular parallelogram, about 90 miles in length, with an average breadth of about 40 miles. A narrow range of mountains closely skirts the north coast, from Cape Kormaciti (Crommyon Prom.) eastward, and is prolonged beyond the main body of the island for 40 miles, forming a remarkable horn projecting towards the north-east, as if it were a continuation of the Mount Amanus of the mainland, from which it is only 75 miles distant. A channel of about 60 miles in width separates the island from the coast of Cilicia, or Asia Minor, and may be regarded as a prolongation of the Gulf of Scanderoon. A narrow plain in some parts divides the northern range from the sea, and forms several small bays and anchorages, among which is the port of Kerynia.

Towards the interior the northern range bounds the great and fertile plain of Messaria which stretches across the island from the Bay of Famagusta to the Bay of Morpha. The plain contains the capital of the island with other towns and villages and divides the northern range from the mountainous and hilly region that characterises the southern part of the island.

The southern mountains culminate in Oros Troados or Mount Olympus at a height of 6590 feet above the sea: towards the west they spread over a breadth of 40 miles and abound with picturesque and wooded scenery, which cannot fail to prove a great attraction under a well-regulated government.

The soil of Cyprus is of a rich and fertile character, and is capable of raising to perfection all kinds of agricultural products; and the level nature of the country greatly facilitates transport.

The principal town and capital is Lefkosia (Nikosia), and is situated in the centre of the island, surrounded by mountains. It is the seat of the Turkish Governor, and of the Greek Archbishop, who is Metropolitan of the whole island, and an Armenian Bishop. Lefkosia is about 3 miles in circumference, and at one time contained many fine buildings, which are now in a dilapidated condition. Its chief industrial products are cotton prints and morocco leather, and there is some trade in raw cotton and wine.

The most important places on the coast are *Famagusta*, on the east, formerly famous for its copper mines. During the Venetian occupation it was strongly fortified, and many beautiful buildings erected; but it is now much decayed,, most of its buildings being in ruins. *Larnaka* lies at the eastern foot of the southern range, near the south coast, 24 miles south of Lefkosia, and is the seat of the European consulate. It is from 2 to 3 feet above the level of the sea, and is exposed to the E. and S.E. winds, but is protected from the westerly winds by Cape Citi. From its geographical position it is capable of great commercial extension, On

account of earthquakes the houses are mostly built of clay, of one story, and the apartments being paved with white marble render their interior very comfortable. Its principal exports are cotton, wine, salt, corn, opium, turpentine, silk, and fruit. *Limasol*, a distance of about 42 miles S.W. of Larnaka, is on the coast near the centre of the range, but like most of the towns is a heap of ruins: fruit trees are said to flourish here. *Baffo*, once famous as the place where Aphrodyte (Venus) rose from the froth of the sea, is near the western end, and during the time of the Roman occupation was the principal town of the western division of Cyprus. It contains now little or nothing of its former importance, and like other towns is in a ruinous condition.

The coast of the island was surveyed in 1849 by Captain Thomas Graves, H.M.S. 'Volage.' The Admiralty *Mediterranean Pilot*, based chiefly on the information derived from this survey observes (p. 256 of the 2nd volume): "Cyprus possesses no harbours, and only few anchorages in open and exposed bays, situated on the southern and eastern coasts." There are three lighthouses all on the southern coast, Capes Gatto, and Citi and Larnaka, all established in 1864.

The summer heat is very great, but fortunately at this season the *imbatto* or sea-breeze is regular, commencing about 8 A.M. and lasting till about 3 or 6 P.M.: then there is an interval of calm till the land-breeze makes about 1 or 2 o'clock in the morning, and continues till about sun rise. The *imbatto* is mostly felt on the north-west of the island and the land-breeze on the south-west. About the middle of September these breezes cease, and this is the period of greatest heat, which lasts until the middle or end of October, when the rainy season usually commences and continues till about April. The north winds which come from the lofty mountains of Asia Minor are very cold in summer, and cause great injury to the cotton plants, and are most prevalent in the months of December and January. The principal cause of failure in the crops of Cyprus is drought, for often no rain will fall from April till the end of October. In 1869 the drought was so terrible that nearly all the crops perished.

The testimony of most travellers and residents in the island agree in the opinion that fevers are prevalent during the warm months, but are seldom or ever fatal. Exposure to night dews and incautious indulgence in such fruits as cucumbers, water-melons, and raw fruit, often contribute to bring these fevers, which rarely attack Europeans or the more opulent classes of inhabitants, who are more careful in diet.

Herodotus remarks of Cyprus that the Greeks, Libyans, and Phœnicians colonized it. The island appears to have been first tributary to Egypt, and when that kingdom was overthrown by Cambyses it passed into the dominion of Persia, and subsequently into that of Macedon. After the death of Alexander, Ptolemy Logus made it a province of Egypt, from which country it was taken by the Romans. After the fall of Rome it remained under the sovereignty of the Eastern Empire, and its Greek governors were called Dukes till 1191, when Richard I. (Cœur de Lion) conquered it, and, having killed Isaac Comnenus, assumed the title of King of Cyprus. Two years after he made it over to Guy de Lusignan, and it was governed for a time by the Lusignan family. The Genoese subsequently held it for 90 years, till shortly after James the Bastard's death, his widow abdicated (1485), leaving it to the Venetians. It was taken by the Turks in 1571, under Sultan Selim II., after the famous siege of Famagusta, and has since been held by them.

Cyprus is very rich in Phœnician, Assyrian, and Greek archæological remains, some of which are of great beauty. A very interesting work on the subject of his excavations during a residence of ten years in the island was published last year by General Cesnola, American Consul for Cyprus. Of Famagusta he remarks that the place is as impregnable and intact as when first raised by the Lusignans out of the solid stone ruins of Salamis (Dr. Unger thinks the fortifications contemptible—it may be observed). The old bronze guns of the republic of Venice are still to be seen on the bastion—their original place. The ruins, General Cesnola observes, are quite touching. Only two out of three hundred churches said to have existed in Famagusta are left standing. The military governor resides with his troops (a company of the artillery) in a small fort overlooking the sea and flanked by a large round tower, called by the natives "Torre del Moro," which is said to have been the head quarters of the Venetian, Lord-Lieutenant of Cyprus, Cristoforo Moro (the "Othello" of Shakespeare). The fortress contains some of the worst criminals of the Turkish Empire.

General Cesnola's book is profusely illustrated with specimens of the archæological remains discovered by him, and is accompanied by special monographs on the rich treasure found at Curium and other archæological points of special interest.

The principal exports are given below. The figures relate to the report for the year 1871.

Locust beans	£42,450	Wine	£12,800
Salt	27,000	Wool	10,868
Wheat	22,500	Skins	8,166
Cotton	22,062	Barley	8,000

The total value of the exports in the same year amounted to 203,428*l.* while the imports, of which American cotton goods was the most important, amounted to 147,500*l.*

The total tonnage in the roads of Larnaka in the year 1871 was (sailing vessels and steamers) 113,886, of which Austro-Hungary claims the largest share, with 59 vessels of an aggregate tonnage of 65,642 (nearly all steamers). Turkey came next with 866 small sailing vessels, of an aggregate tonnage of 29,363, while England was a bad fourth, with 11 vessels of an aggregate tonnage of 6343.

The produce of wheat in an average year is 1,500,000 kilograms, of which about one-third is exported in sailing vessels, the export beginning in June. The price varies between 18 and 30 piastres per kilo.

Barley is exported in a less degree. The local consumption of wine is about one-third of the total produce, the rest being exported from Limasol in sailing vessels. The best is called Commenderia, which occasionally fetches high prices. Droughts and locusts are oft-recurring calamities in Cyprus, which cause famines to follow close on years of plenty. The forests

consist of cedar, pine, cypress, oak and beech, which yield useful timber for building and other purposes.

Dr. Unger, the author of *Die Insel Cypern* (Vienna, 1865), one of the most trustworthy books of reference on the subject of this island, is of opinion that the notoriously unfavourable remarks of Clarke, who travelled in Cyprus 60 years ago, could apply with any truth only to the southern and eastern parts of the interior of the island; and these were probably in some degree exaggerated, owing to the extraordinary discomforts and difficulty attending any attempt to penetrate into the interior.

SKETCHES OF PERSIA.*

IN the spring of 1874 it was announced in the Russian journals that, under the auspices of the Russian Geographical Society, a trading caravan, equipped by Colonel Glukhofski, was about to proceed *viâ* Persia to Afghanistan, and that a M. Ogorodnikof, on the part of that Society, was to be attached to it, in order to study and to report upon the general condition and resources of the countries traversed; Colonel Glukhofski, at whose request the Russian Geographical Society deputed M. Ogorodnikof to accompany the caravan, undertaking to defray M. Ogorodnikof's travelling expenses, and to afford him every comfort and assistance.

Captain the Hon. G. C. Napier was at that time commissioned by the India Government to proceed to Persia, with the object of settling some Perso-Afghan differences arising from the Seistan arbitration; and when the caravan was despatched he was working his way up from Bushire to Khorassan.

M. Ogorodnikof met Captain Napier at Shahrood, and strangely enough, neither of these two Europeans could speak more than a word or two of any language known to them in common. Captain Napier asked of the Russian: "Speak you English?" "Very bad," he replied. "Parlez vous Français?" "Mauvais." "Sprechen sie Deutsch?" "No." We here come across a curious misapprehension, or perhaps a mis-statement, of a piece, by the way, with the information said to have been given by Captain Napier himself, of an attack made on his party by some Baluchee robbers, in consequence of which he was obliged to go to Teheran to re-equip. What could have prompted M. Ogorodnikof to say that Captain Napier told him that he had read of him (Ogorodnikof) in Sir Frederick Goldsmid's works, and to have replied that he had indeed made General Goldsmid's acquaintance at Shahrood? At p. 379, of vol. ii., of *Eastern Persia*, Major Euan Smith mentions only "two upper-class Moujiks" who visited Sir Frederick. These two persons were certainly not Moujiks, nor yet was either of them M. Ogorodnikof, who was not there at all.

Captain Napier's travels in Persia being contemporaneous with the journey undertaken by M. Ogorodnikof, was regarded by the latter as a suspicious circumstance. He concluded that the India Government took him for a secret political agent, and had therefore commissioned the British Officer—a son of the Commander-in-Chief in India—to keep a watch upon his movements, and, if possible, to put impediments in his way. It was announced as a fact in the Russian papers of the period, that Captain Napier was sent to lavish money freely on the Turcomans, in order to win them over to British interests, and that he supplied them abundantly with rifles to resist General Lomakin's detachments.

The greater part of the book is composed of the promptings of M. Baumgarten, the Agent of the Russian Trans-Caspian Company, and of the Moscow Merchant Morozof, who, during a long residence at Shahrood, has gained a very great knowledge of the country. This person also reports on various matters to the Russian Consulate, at Astrabad; to our author he was in every way indispensable, and his work is mainly an epitome of M. Baumgarten's Persian experience. The latter is said to be generally esteemed and liked, "but whether with sincerity he cannot himself determine." That he is feared is an undoubted fact, for the Mollahs are on friendly terms with him, on account of his great cleverness and goodness of heart; while the authorities, considering him to be a secret agent of the Russian Government and dangerous to themselves, openly side with him, "receiving the crumbs (perhaps more correctly speaking the *drops*) of his munificence;" thus, at his request, the *Daroga*, who farms the Bazaar, will readily cause any common resident to be bastinadoed.

From his isolated post M. Baumgarten communicates with Astrabad and Gez by means of carriers, who perform the journey in two-days-and-a-half, for a remuneration of two *tomans* weekly. Special messengers are employed in communications with the consulate. In the winter he communicates with Russia only once a month; by way of Julfa letters take three months coming in that season. In February and March the communications are twice a month; the carrier comes into requisition upon the opening of the navigation on the Caspian.

Among the individuals employed by M. Baumgarten in commercial transactions, and "for other purposes," is a certain very wily Mollah *Ghulon Riza*; this man is an adherent of the *Babi* sect, and the Russian agent has a strong hold upon him and others like him through a knowledge of certain secrets.

We ourselves know a great deal about the East, yet with all our knowledge of the nature of Orientals, and of the vices with which they are tainted, we have not displayed the happy Russian knack of catching people by the ear of their venial foibles and of thereby misleading them. The Russian resident in Khorassan holds a great many Persians by the sectarian or *Babi* ear, and derives from that fact much profit of a certain kind; but he holds a great many more, both high and low, by another ear, *i.e.* the fondness for Russian spirituous liquors, with which he has inoculated them. He has gauged this fondness for Russian *Vodka* with every Rusian liquid measure, from the *Vedro*, or pail, to the *Shtoff*, or small bottle; and the peasant, the Mollah, the *Reiss*, and the "Prince photographer," now "gulp" with "gusto," albeit still with a little assumed modesty and reserve, and it appears from the work under review that the crowd which usually surrounded the Russians in Persia was attracted by the odour of Russian *Vodka* and *Nalivka*, (cordial).

* *Sketches of Persia.* By P. Ogorodnikof. (St. Petersburg.)

M. Ogorodnikof, as well as Colonel Glukhofski's consignment of goods, got only as far as Mash-had, and it would appear from the former gentleman's work that the expedition was simply a commercial venture, in which the Russian Geographical Society was in no way concerned, and that Colonel Glukhofski cared still less about M. Ogorodnikof's pursuits on the journey, since he had, as he expressed himself, "staked my pocket on this speculation."

The value of the merchandise despatched was 14,000 roubles, and consisted of 120 bales and boxes. The carriage from Gez to Shahrood was paid for at the rate of 7 krans per weight of six poods = 469 krans.

With regard to the venture, we are not told whether it was a successful one; and, indeed, M. Ogorodnikof brings his narrative to a close at the point of his departure from Shahrood for Mash-had. It was much doubted, however, both by M. Ogorodnikof and by M. Baumgarten, the Russian agent at Shahrood, that the results would be remunerative, the piece goods, cotton prints, silks, &c., being pronounced unsuitable to Asiatic tastes. Moreover, M. Baumgarten boded no good from the stamp and character of the man—a certain Groshef—who conducted the enterprise. He was of the common type of Russian shopmen, and it is more than hinted by the author of these sketches that his integrity was not to be strictly relied upon. The advent of this Groshef with the bales gave occasion to unseemly wrangles. M. Ogorodnikof complains that the promises made in regard to the payment of his expenses and to facilitations were but partially fulfilled, and Groshef's ignorance and his surreptitious mode of conduct were not calculated to propitiate his Highness "the prop of the empire" and the other authorities in the country.

It is opined by our Russian author that the Russo-Persian trade *viâ* Astrakhan, Gez, and Mashadesser, on the Caspian, is capable of development in the same measure as the trade with the khanates from Krasnovodsk, which was originated by Colonel Glukhofski in 1869.

Borrowing from the Russo-Persian Trade Returns for 1873, we find the staples of that trade are:—

PRINCIPAL EXPORTS TO PERSIA.

	Roubles.
Cotton fabrics	276,191
Iron, unwrought and manufactured	105,354
Woollen fabrics	174,794
Earthenware, china, glass and crystal ...	67,453
Silk fabrics	47,225
Stearine candles	32,062
Writing and wrapping paper	31,128

PRINCIPAL IMPORTS FROM PERSIA.

Cotton	505,513
Dried fruit	262,329
Pelrey	103,918

The annual value of the Russo-Persian trade is only roubles 7,000,000, the imports from Persia alone amounting to R.5,000,000. This shows a balance of trade in favour of Persia, and indeed if this were otherwise the Committee of Ministers in 1870 would not have decided on the "toleration until further notice" of free transit of foreign merchandise through trans-Caucasia, even to Baku and to the Persian coast of the Caspian. At the same time there is a great deal of smuggling, the Persians contriving to pass their more costly commodities, such as precious stones, opium, and carpets as contraband through the Custom House at Astrakhan.

Marseilles sugar is perceptibly driving Russian sugar out of the market, the quality and price being such as to enable the commonality to buy, and it is preferred too, because it melts easily, for the Persians being given to drinking very hot tea, prefer the saccharine substance which dissolves quickly. In the year 1870 no less than 5860 cases of French sugar were imported into Persia, *viâ* trans-Caucasia and the Mazanderan, coast. It would also appear that French and English cottons and cloths are greatly preferred by the Persians, which, as well as the sugar, obtain a ready sale for cash, the Russian goods which are more readily disposed of on like terms, being iron, *mitkal* (calico shirting), and stearine candles.

It is to be borne in mind by those who would venture to trade profitably with Persia that their consignments should be placed on the markets early in the spring, a little before the opening of the navigation in the Caspian; and in the autumn, so soon as that navigation ceases, *i.e.*, when the stores of European merchandise are exhausted in the Persian warehouses.

In commercial respects Shahrood is regarded as a very promising place; it is supplied with transit goods (*viâ* trans-Caucasia), and with Russian products to the value of R. 1,200,000. In metals, candles, cottons, silks, cochineal, paper, "Sunduks," &c., Russia supplies poods 2800. Shahrood commands the only convenient route from Russia into Khorassan, and therefore to Herat and Afghanistan, and is independent of all communication with Teheran and Yezd.

M. Ogorodnikof says that his attention was directed to the practical objects of the expedition; to the topography, mineralogy, natural history, ethnography, and social and political conditions of Persia, practical objects concerning which Colonel Glukhofski, the originator of the expedition, is reported to have said that he did not care a straw, whence it followed that our author suffered dire indignations through the behaviour of the Colonel's agent Groshef attributing the success of his studies to the assistance given to him by M. Baumgarten. Through the instrumentality of this person M. Ogorodnikof obtained a complete collection of local, W. European, and Russian products, samples of various articles in common use in Khorassan, a variety of MSS. on Turcoman poesy, on the persecuted sect of the *Babi*, which is striving to spread a propaganda of reconciliation with Christianity, besides numerous other native works on religion, medicine and general instruction. M. Ogorodnikof also made a numismatic collection, chiefly silver coins, among which were forty rare specimens.

In reference to the social and political status of Khorassan (the "Bosom of Persia"), it is to be gathered from M. Baumgarten, whose opinions are very extensively quoted by M. Ogorodnikof, that the sooner the country is placed under a protectorate the better, for that Persia of to-day is what it was centuries ago.

Let us see the aspect which Khorassan of the present day presents on Russian authority. This province occupies 3850 square versts of higher Persia; it is closed in by the Elburz on the north, by the extensive

salt desert Dasht-i-Kavir on the south, and on the east it adjoins Afghan Khorassan, a sundered portion of itself. The province is composed of waterless deserts, of steppes and barren mountain ranges, with a few towns and villages set in oases, and with cultivation in the valleys. Here is the full glare of the sun and a clear sky, rain seldom falling; no rivers whatever, only a rill here and there to enliven nature; the climate particularly dry; the days excessively hot in the spring and summer; the nights suffocatingly sultry, though occasionally cool in the valleys and cold on the mountains; the winter generally mild. The population may be put down at half a million since the famine, inclusive of nomads. The centres of Kurd population in Khorassan are Kuchan, Budjnur, Bam, Deragez, and Chinoran. The Kurds occupied with industries are called "Sher Nishin," the rest, or the majority leading more vagabond lives, being styled "Sora Nishin." These latter camp out with their herds in the mountains or valleys, according to the season of the year, on grounds allotted to them by the Shah; they live occasionally by plunder, and are in a chronic state of hostility with the Turcomans. These two ever-warring communities live in a great measure by the proceeds of slavery which their mutual conflicts engender. The Kurd sells his Turcoman slave for 100 or 200 tomans in cash, or in horses or camels; while the Turcoman realises only from 60 to 80 tomans for his Kurd captive. This may perhaps be explained by the fact that the Kurd dealer commands the better market, and in Persia his brother bondsman can more easily escape, the Kurds composing the bulk of the Persian army and holding the industrious classes in great contempt. The Il-Khan or Controller of the Kurds of Khorassan has unlimited powers and is responsible for his trust to the Shah alone.

It is the opinion of M. Baumgarten that the Persians do not evince any gratitude to Russia for the emancipation of Persian slaves in Khiva in 1873, that they hold the Russians even in contempt while they cringe to them from fear and apprehension of being one day swallowed up by their potent neighbour who has secured such a brilliant position in Central Asia. Individually the Persian governors seek to propitiate Russians in their country as possible informers against them to the Shah, in respect to their rapacity and misdeeds.

On the whole, however, Russian influence is not on the increase in Persia, seeing that besides Vitkevitch in 1857, and Khanikof in 1858, no Russian officer has penetrated to Afganistan or Herat or laboured in Persia to strengthen the Russian influence. Yet says M. Ogorodnikof, strong suspicions are entertained by the English of Russian designs on India, suspicions which in his opinion may sooner or later be justified. By force of destiny, the Russian arms are ever drawing into closer proximity with India. Have not General Scobelef's detachments penetrated to the left bank of the Kizyl-Su striking the direct route to Wakhan whence Badakshan is so easily accessible? And from Badakshan is there not a well beaten road into India through Dir to Peshawer and to Cashmere? Of the two roads to India, viz., the one through Persia *and from the Oxus* across the Hindu Kush by Cabul and Peshawer, and the other from Kokand through Eastern Turkestan the Bamian and Cabul—*the latter is the best, the shortest, and the most convenient!*

Is there not also (asks M. Ogorodnikof emphatically) a M. Pashino (who can boast of some experiences in British India), to guide the invading Russian forces to the North-west Provinces of the British Indian possessions?

SAGHALIN FROM A JAPANESE SOURCE.

DURING the last few years the cession of Saghalin by Japan to Russia has given that remote and little-known island a greater importance in Europe than it seems as yet to deserve. Even now it is but very little known, either at home or to those Europeans who have passed many years in the far East. This cession caused considerable excitement in Japan, and is still one of the staple accusations against the Government on the part of a portion of the native press, and of those malcontents who, from time to time, disturb the tranquillity of the country. Very little attention, however, seems to have been directed by this circumstance to the acquisition of a knowledge of the condition of the island and its inhabitants.

It was formerly usual to send, at uncertain intervals, an official of the Shôguns' Government to inspect and report upon it. These reports, as far as I am aware, have never been published; but a certain Mamia Rinzo, one of the officers sent in this manner, at the beginning of the present century, left a work containing an account of his visit and observations in manuscript, which was published in 1855, about half a century after the date of the visit which it records. The author seems to have carefully observed and noted down all that he saw, and although parts of the work are excessively crude, it contains, on the whole, a fuller and more trustworthy account of Saghalin than any Japanese work which I have been able to find. Rinzo spent over two years in travelling over the island and a portion of the adjacent mainland, and the result for us is a work in four medium-sized Japanese volumes, profusely illustrated with rude but expressive woodcuts.

I propose in this article to condense rapidly the main facts contained in the work, premising, however, that although four volumes may sound startling to the English reader, it is by no means so formidable an amount in Japanese. A complete English translation of the *Kita Yezo Dzusetzu* (or illustrated description of Saghalin), as this work is called, would not much exceed in length an average article in one of our quarterly reviews. We will now leave the author to speak for himself.

Name of the Island.—The name *Karafuto*, by which it is generally known in Japan, is clearly not the real name of the island, because some of the inhabitants had never heard of it; and those who used it could assign no reason, merely observing that it was so called by the people of Yezo island. The name *Shirunmoshiri*, again, which is used by the people of Santan, cannot be its correct name, because it is merely a contraction of the words for "people living on an island." The letters for *Derekasan*, again, which were employed to express the name of the island by some people on the mainland, cannot be accepted, because this is probably a name of their own invention, like *Karafuto* by the Japanese. On a French map it is called Saghalin—a name which is,

no doubt, derived from the name of the source of the River Mango,* which enters the sea opposite the island, and was called by the natives *Saghaliz Oula*, or the Saghalin river. In a French geography the island is called *Erente-bôse*. *Erente* means to block up or obstruct, and *bôse* an island; and the name is derived from the fact that the island is so placed that it seems to obstruct the current of the river. Finally, by a decree of the Japanese Government, the island was named *Kita*, or Northern, Yezo. For many reasons this is the most suitable name: it is only a short distance north of Yezo; its inhabitants, like those of that island, are people with peculiar customs; their occupations and mode of life vary but little; and neither has any Government.

Its Physical Geography.—The southern part of the island is very hilly, but there are only two mountains which can be called high. These hills, as well as the plains and wide moors which lie between them, are covered with forests. As, however, there is not much moisture, the fallen leaves are of no benefit to the ground, but become mere dust, which catch fire when the natives camp out and omit to extinguish their fires. The fire frequently spreads to the trees, and it is no rare occurrence for all the trees in a space of forty or fifty miles to be consumed in such conflagrations. On account also of the looseness of the soil, whole forests are sometimes blown down in a single storm. In the most northern part of the island there are no elevations, the whole country being composed of immense arid plains and wide moors.

There are numerous rivers in the island, but, with the exception of two, the Shi and Tomô rivers, they are all small, and, for the most part, fordable. There are only two lakes of any importance—the Taraika lake, which is about twenty-five miles in circumference and is only about half a mile from the coast; and the Tonaicha lake, which has a circumference of thirty miles, and is also near the coast.

The strait which divides the island from the mainland varies in breadth from twenty miles in the broadest to five or six in the narrowest parts. The tide rushes through it with the force of a river. It is completely frozen over in winter, and the natives cross and re-cross on foot or in sledges, drawn by dogs. Under ordinary circumstances, there are seven different places from which the natives cross to the mainland. The distance from each place, as well as the difficulty and danger to be encountered, varies greatly.

Its Productions.—Trees are numerous everywhere, but with very few exceptions they seem to be unfit for use in building. Bamboo is entirely absent. Evidence of the existence of the five principal metals were seen here and there, but they did not seem to be sought after by the inhabitants. Sulphur is produced nowhere in the island, and there are no volcanoes or hot springs. No peculiar grasses were seen, and those kinds which grow there are very coarse. Two peculiar animals called the *Tonakai* and the *Rikinkamoi* are found here. The former is like the deer. Its face and eyes resemble those of the horse, and although it is armed with horns which have formidable branches, it is very docile. It lives in the mountains in the southern part of the island; the people of one tribe hunt it for the sake of the skin and flesh, while the Orokko tribe use it as a beast of burden, as it can be easily domesticated. The *Rikinkamoi* is like the roe in shape, and is about the size of a dog. It is used for food. Eels are very numerous in the valleys, but as the natives dislike them on account of their peculiar appearance they are not used for food. Whales, seal, carp, shell-fish and salmon are also numerous.

About a third of the whole island is inhabited by people of the same race as the Aïnos of Yezo. The remaining inhabitants belong to two tribes called Orokko and Sumerenkuru. These three divisions will be separately dealt with.

The Inhabitants of the Southern part.—Although these are chiefly Aïnos, they differ considerably from their fellows in Yezo. They shave off much of their hair and allow the remainder to hang down their backs. The women tattoo like those of Yezo, but the practice is not as universal as in the latter place, nor is the colour of the marks as deep. The clothing of both sexes is made from the bark of trees, which is first soaked in water and bleached, then twisted into threads and woven into a rough kind of cloth. They wear also cotton dresses, but this stuff is bought from the natives of the mainland, or from Japanese traders. The skins of fish and beasts are also used for clothing in the same manner as by the natives of Manchuria. The ornaments (which it may be mentioned are not used by the males at all) are entirely of brass, and are procured from the mainland. Their food consists chiefly of various roots, which are eaten with the oil of certain animals; but they also eat animal flesh and fish. The roots collected by the females in spring, summer, and autumn are dried in the sun, and then stored up for winter consumption. The oil is used not so much as a condiment as to destroy the effect of certain poisons which they say are contained in the roots. The oil which they use is procured from one of the other tribes in exchange for axes and knives.

The number of these people is about 3000, and although, on account of the difficulty of communication, as well as the unsettled habits of the Orokko tribe, it was difficult to ascertain the population of the island, it may be taken approximately at about 10,000.

Some of the people in the southern part live in caves in the winter, but this is not a general custom. These caves are generally dug out of the side of a mountain; poles are erected outside and a roof, made of the bark of trees, covered with branches and leaves, is placed on them. The chief articles in daily use are iron pots and bowls imported from Japan. Earthenware utensils are made by themselves. Their boats and sledges are also made by themselves, and are not of a very good construction. Dogs, however, form their chief occupation. Almost every house supports five or six of these animals, and besides these there are a large number of ownerless ones. The greatest care is taken in rearing them, and they seem to be very much attached to their masters. They are used chiefly for drawing sledges and boats, but they assist also in hunting. A skilful native can drive eight or nine attached to a sledge, but the utmost attention is necessary to prevent the sledge from turning over and throwing the driver out on the snow. If such an accident occurs, the dogs rush away with the sledge, until they are brought up by

* The Amur is, no doubt, here referred to.

the sledge becoming caught by the corner of a rock or by the root of a tree. The natives consider the choosing of the leading dog a most important affair, because, if he is bad, the others become lazy and useless. In hunting, these dogs kill the more powerful animals, and drive out the others from the recesses of the mountains. The dogs which are of no use are killed for the sake of the skin and flesh, which is eaten, but the skin only of those who die is used.

The animals which the natives catch are generally eaten, and the skins form an article of trade between them and the people of the mainland. They use traps for the otter, fox, bear, and some other animals. For the bear a trap containing a poisoned arrow is generally used, and if this is not sufficient the animal is attacked with spears.

The people of the mainland cross over to the island constantly to trade. They bring cotton, balls, pipes, tobacco, and pins, and exchange them for the skins, axes, and knives brought by the natives. This intercourse is carried on in a very friendly manner, although quarrels sometimes arise from the neglect of the latter to carry out their bargains. The natives trade also in human beings with the people of the mainland. They seize all those who are friendless and weak and poor, and sell them for the articles above mentioned. The natives of Yezo also make raids in the island, and seizing those who cannot offer sufficient resistance, sell them on the mainland.

The women are treated with much more respect here than in Yezo island. They are not forced to work hard, and the men procure the dresses and ornaments for them. They have a very peculiar funeral ceremony. When a chief dies, they open his stomach and take out the intestines. They then erect a small stand outside the house, and lay the corpse on it. The latter is washed every day by certain females, set apart for that purpose, and allowed to dry in the sun, so that it may not decay. This is done for a whole year, when, if no part of the body is decayed, the women are rewarded. If, however, the corpse shows any sign of decay, the women are forthwith killed. This latter custom, however, is said to be practised no longer. In either case, the body is put in a large coffin, which is profusely adorned with carvings, and which is then laid on the surface of the ground.* The bodies of deceased females are interred, and a wooden memorial tablet is erected over the spot. The custom of burning down a person's house after he dies, which is practised in Yezo, is unknown here; but the houses of those who die violent deaths are burned down. The bear is an object of worship, as among the Aïnos of Yezo. The animal is fed for two or three years; the claws and teeth are removed as it grows older, so that it may do no harm; and then at the period of the feast of the bear it is killed with an arrow, while in Yezo it is crushed under a large tree. This festival is the same all over the island.

The Orokko Tribe.—This tribe inhabits a track on the east coast, and differs very much from that living in the southern part of the island. The language is not the same; the people do not cut off or shave their hair, but tie it up in a bundle. Our knowledge of this people is but very slight; but the countenances of the men are most unprepossessing. The clothing is made chiefly of seal or fish skin; cotton which has come from the mainland is also used. It is considered immodest for a woman to show any part of her body. The clothing reaches to the ankle, and the skirts are adorned with copper ornaments. Their food and drink is the same as that used in the southern parts. They have no fixed residences, but wander about wherever they can find fishing and hunting or plants fit for food. Their temporary huts are covered with the bark of trees, or with a sort of oiled paper, or fish skin. Their occupations are similar to those already described, except that they use the *Tonakai* as a beast of burden instead of the dog. Owing to the difficulty of communication with them, full account cannot be given of their customs. They do not prevent relatives from marrying, but no one is permitted to marry into another tribe. They seem to expose their dead in a coffin in the wayside. They are of a very quarrelsome disposition, and assassination is common. In the latter case the relatives and friends of the deceased do not slay the murderer, but having inquired into the crime they take a compensation from him. This is also the custom among the Sumerenkuru tribe. Nothing further worth noticing was seen in the people of this tribe. The author did not reside long amongst the people, and so he did not learn much about them.

The Sumerenkuru Tribe.—The people of this tribe inhabit the north-west coast of the island, and are subject to Manchuria. Their modes of adorning their persons are similar to those of the Orokko tribe, but they possess a more engaging appearance than the latter. Those females who cannot use the needle deftly, even though they may be pretty, are despised by the other sex, and their marriage is distant; hence the women are very industrious in acquiring this art. In their treatment of guests the people of this tribe differ greatly from the other inhabitants of the island. They are particularly careful in arranging them according to their relative rank, those of the highest class sitting in the middle of the house, and the others to their right and left. They differ but slightly in their food and chief occupations from the other inhabitants of the island; but a few of their customs are peculiar to themselves. They have no objection to one of their own tribe marrying into another tribe; and the marriage ceremony seems to be similar to that of the Aïnos of Yezo. When two persons desire to marry the male sends valuable presents to the father of the girl and begs that she may be given to him as his wife. Marriage within the same family is on no account permitted. Quarrels between the admirers of a woman are very numerous and frequently end in bloodshed. Sometimes a man secretly induces a girl to run away with him from her father's house, and then sends his most valuable possessions as a peace offering, at the same time acknowledging his offence. Permission to marry is then obtained.

They burn the bodies of their dead, and, having taken away the bones, bury them in a coffin by the side of a small shrine, which they erect near their houses. A brass plate is then put into this shrine, and offerings are made at certain periods. At the end of three or four years the whole is broken up and

* Somewhat similar modes of desiccating the dead were practised by the ancient Peruvians, some South Australian tribes, the Looshaïs, and some African tribes.

thrown away. They also offer up the heads of fish on the seashore to propitiate the ocean deity, in the same manner as the Aïnos of Yezo.

This brings the text to a conclusion, but in an appendix the author gives the result of inquiries which he made into the origin of the sovereignty claimed by the Manchus over this tribe. There was a time when it paid no tribute to Manchuria, but from a certain time (unknown) ships began to come there regularly to trade. The sailors were very violent, and constant quarrels occurred. The Manchus hearing of this crossed over from the mainland to inquire about it, but most of the natives, taking them for their enemies, the sailors, fled to the interior. The visitors found, however, certain men who had remained behind, and proceeded to appoint them as overseers of various districts. A treaty also was made according to which one marten's skin was to be paid each year as tribute to Manchuria, the latter giving in return a roll of brocade. It was also agreed that the people of the Sumerenkuru tribe were to have special facilities for trade with the mainland.

The following incident closes the work:—Some years previous to this six Russians "of the Kiren tribe" came to live on the coast, and the natives had to suffer much evil and violence at their hands. They violated the native women, and the tribe was in a a state of constant turmoil. They remained for three or four years, until finally the natives and some of the people from the mainland banded together and murdered them all, "so that," the author adds, "not a single Russian now comes to this place."

It may not be uninteresting to compare the above account with that given in Colonel Veniukof's work on the Border-lands of Russia in Asia, which was published in 1873, and with which I am acquainted only in a German translation. The following is a brief summary of the article on Saghalin in this work:—

Up to 1849-52 it was generally believed that Saghalin was joined to the mainland by a neck of land or a sand-bank; but in these years Captain Newelski proved by his surveys that this was not the case, and that it was distinctly an island. In 1807 Lieutenant Chluostow took possession of it in the name of Russia; but this act was subsequently disowned by his Government, when Golownin was in captivity in Japan. The Japanese established themselves there in 1780, but the natives never stood to them in the relation of subjects, so that the island, *de jure*, belonged to no one, although it was marked in European maps as a Chinese possession. The only connection which the latter ever had with the place was on the rare occasions when traders came from the Amur to purchase skins. In 1853 stations were established there by the Russians, but were withdrawn on the outbreak of hostilities in Turkey. They were re-established, however, soon after, without any opposition from the Japanese, who on their side also established stations for the protection of their trade.

Saghalin is 892 versts long, and from 136 to 25 versts in breadth (according to the Japanese author it is more than 200 *ri* in length, and from 16 to 17 *ri* in breadth; 1 *ri* = roughly 2½ miles). There is not a single bay which can be used as a natural harbour, the two largest bays being too wide and too much exposed to the wind. A range of hills runs throngh the whole length of the island, reaching here and there a height of 2000 feet or more, but, contrary to what might be expected in such a severe climate, they never reach the line of perpetual snow. The two chief rivers of the island are the Poronai and Tzuni, the former flowing southward, the latter in a northerly direction; but neither are longer than 160 or 170 versts.

There are no volcanoes on the island, although it forms a continuation of the Japanese volcanic range. It contains rich beds of coal, which give it not only future but also a present importance. Among the other natural riches of Saghalin, forests, animals of the chase, and fish take a first place. The forests contain chiefly fir, larch, and in a lesser quantity pine; also oak, birch, and elm. The natives support themselves chiefly by fishing, which is also a source of much profit to the Japanese concerned in it. The whale-fishery is carried on entirely by people who come from other places for that purpose; the seal-fishery by the natives. On account of its climatic conditions, the organic nature of the place cannot be either rich or numerous. The neighbouring Okhotsk Sea and cold districts of Eastern Asia exercise a baneful influence over all. In the middle of May snow still remains on the mountains, even in the south. The average temperature at Kussunaï is about 34° F., an average which in Norway is only found north of the Arctic Circle. The highest mean temperature in July is about 62° F., and in January 14° F. The severity of the climate is extraordinarily increased by snow in winter, and by the dampness caused by fogs and overflow in summer.

The population of Saghalin consists of Russians, Japanese, Chinese, Giljaks, Aïnos, Orokkos, and a few Europeans and Americans; in all about 13,000 or 14,000 souls.

The Russians, who number about three thousand, are almost entirely soldiers belonging to the Eastern Siberian army; the remainder are peasants and traders. They live in ten settlements.

The Japanese live on the coast in the southern part. Formerly their chief object on settling here, or rather in coming in the summer, was fishing and trade with the Aïnos; but subsequently they had a political purpose to serve; they wished to strengthen their influence on the island against Russia. With this object they followed the steps of the Russians in colonising; and as soon as they noticed that the Russians had settled anywhere, they appeared there immediately with their own colonists. Hence there are corresponding Japanese settlements round all the Russian settlements south of the 48th degree of latitude. All the Japanese in Saghalin are under the jurisdiction of officials who are themselves subject to the Prince of Matsumai. The revenues derived from the fisheries amount to 800,000 roubles.

The Chinese were first brought to Saghalin from Hongkong in 1868, by Americans, who worked the mines at Ssertunai. They were all unmarried and had no intention of settling in Saghalin.

The Giljaks live in the northern half of the island, as far as 50¼° N. lat. They carry on fishing, hunting, and also some trade. They go in boats to the southern part, and buy skins from the Aïnos, which

they sell again to Siberian traders. They live scattered about on the banks of the rivers, at a greater or less distance from the sea. According to their religion they are Shamans; no culture exists among them, and they have no writing. Their number is probably not more than two or three thousand souls.*

The Aïnos, who number more than 3000 souls, inhabit the island south of 50° N. lat. They hunt and fish and are completely dependent on their creditors, the Japanese. They have a somewhat more civilised appearance than the Giljaks, on account of their habit of eating rice, wearing Japanese clothes, and their long intercourse with the Japanese. But there is no very great difference. The religion, character, legends, and customs, all show their patriarchal state. The Aïno villages consist generally of three or four houses, which remind one by their mode of construction of Japanese houses.

A small number of Orokkos live in the mountains in the centre of Saghalin. They are chiefly hunters, and when unsuccessful in the chase, or when the season is unfavourable, they take to fishing. It is not known what their number is, but it is probably not more than 400.

The population of the island is as follows:—

3000 Russians	3000 Giljaks
3000 Japanese	3000 Aïnos
100 Chinese	400 Orokkos

Total, 12,500

J. W. MCCARTHY.

MORENO'S TRAVELS IN PATAGONIA.

THE following interesting account of the further travels of Senor Moreno in Patagonia, is taken from the Buenos Ayres *Standard*, of 30th May last:—

At Bahia Blanca, where it rains much less than in Buenos Ayres, a dry climate and sterile soil commence, increase gradually on the Rio Negro and Chupat and across the arid table-lands to which I have already alluded, and attain their maximum, according to the Indians, between the forty-seventh and forty-eighth degrees of latitude.

At Santa Cruz the continent commences to get narrow, the distance from the Cordillera to the sea to diminish, and rains are more frequent, though of short duration. The valley stretching westward from the River Chico to Lake San Martin, and which is watered by the Shehuen, exhibits tracts of luxuriant verdure that contrast strangely with the barren table-lands that surround it. In January and February I found the climate extremely agreeable.

The fertile zone, where rain falls, commences at 50° S. lat.; the daily rains in Western Patagonia pass over the Andes and fertilize it, without rendering it uninhabitable, as on the opposite side. The stunted vegetation of the table-lands changes suddenly as it approaches this zone, but as yet does not resemble that of the Andine zone. The traveller who has just traversed the Pampa is agreeably impressed by the change from a wild desert whose sole inhabitants are the timid guanaco and the ostrich, the choicest prey of the "pumas" (lions).

South of the lakes, stretching to the Cordillera, the glacial deposits are covered by extensive plains of grass and clover, the Indians' favourite ground for chasing the wild horse. These plains are bounded on the south by the lava from the Andes, which runs 30 leagues to the east, and has formed gigantic basalt heights, gradually diminishing, amongst which some extinct volcanoes are found. Several small streams (in some of which gold is found) flow from these heights into Lake Argentino, where fish abound, as also wild geese, white swans, red flamingoes, ducks, &c. The basaltic plain which is 20 leagues in length and traversed by precipices, terminates suddenly at the seaboard. The River Gallegos, which falls into the Atlantic, has its source in these plains.

From the source of the Gallegos the country changes, undulating hills stretching to the south and immense forests to the west. These parts are suited for rearing sheep, and Admiral Fitzroy said they reminded him of the Pampas of La Plata. Further south is Lake Blanca, only a few miles from Skyring Water. This lake (which barely deserves the name, from its trifling depth) takes its appellation from the colour which the argillaceous soil imparts to its waters. The same may be said of Tar or Dirty Lake, east of Lake San Martin.

At Lake Blanca the plains are lovely, and the Indians of Papon's tribe live here during the greater part of the year. The Chilian Government also pastures cattle about here, and when I passed some Chilians were building wooden huts to settle down. Further south beds of excellent coal stretch to the sea, which covers them at high tide. These coal-beds give great importance to this region, which stretches to the straits in a plain that will one day feed the flocks of the future Argentine province of Magellan. This plain is bounded on the west by Otway Water and the impenetrable woods of Brunswick Peninsula, under which lie the coal veins now worked at Sandy Point.

In the northern part of the region I have roughly described, and on the Atlantic coast, at the Santa Cruz river, there is a table-land decreasing from 3000 feet in height to less than 900, and becoming less barren as it nears the ocean.

The deep valley of the Santa Cruz, which, probably, like that of Coy Inlet and River Gallegos, was formerly an inter-oceanic strait, has but few fertile tracts. The river's course lies through a volcanic formation, to Pavon Island: on the southern side of the bay there are patches of verdure, but potable water is scarce. The best pasturage from Chupat to this place is found on the lowest (about 350 feet high) of the succession of table-lands which form the foot of the Andes in these regions: there are lakes of soft and salt water, the latter rich in chloride of sodium.

Further south are the Leon Colonies, rising from the coast to the fourth table-land, a height of 800 to 1000 feet, the principal elevation being Mount Leon, at the foot of which the 'Jeanne Amelie' was captured. The pasturage is good, though hard, and would improve if cattle were fed on it; good water is scarce, unless you sink 60 feet for it. This high table-land stretches from Santa Cruz to Gregory range in the Straits. The view from it is illimitable, and only to the S.W. can the distant ranges near the Andes be faintly discerned.

Although the pasturage is not so good as on our pampas, the aspect is not that of a barren steppe, as

* These are probably the "*Sumerenkuru*" of the Japanese author.

in the north: the arbustus is less frequently met with, and some lakes are seen, the water being salty by reason of the soil containing sulphate of soda or chloride of sodium. On the borders of Lake Perdrices (Partridges) there are fresh-water pools, and a town might be founded here, to facilitate communication with the Straits. The climate, however, is extremely cold, owing to the elevation above sea level and the want of trees. In April the thermometer is sometimes 5° C. below zero, but this is an exceptional temperature.

The country improves as we go south, and some ravines similar to those near the Sierras of Tandil are met with. Passing the Tres Chorillos, rivulets of fresh water fall into a salt lake near which the Indians sometimes pitch their tents. And so on between verdant slopes and salt lakes (the latter having nearly always fresh springs near them) we arrive at Coy Inlet, the extreme limit of the salt plains, and which Darwin places at San Julian, two degrees further north. Coy Inlet is picturesque; it was the bed of an old river, or perhaps the sea ran through from east to west. The winding bed of a stream is near; it is just now (the season of thaw) dry, which proves that its source is not in the snow-clad hills. For a breadth of two leagues there is good pasture, which the Indians avail themselves of at a point called Majen Aiken. From Coy Inlet to Gallegos river the pasturage is still better.

Along the River Gallegos the Indians prefer to dwell, particularly at Guerraiken. I came on them there, but as there happened to be a grand orgie going on I could only have short chats with some few of them. These regions have a great future in store for them, and it is a great pity that the Tehuelches, formerly so sober, are fast approaching extinction through drink, sold to them by Christians.

It is generally believed that, in order to populate Patagonia, the Indian must be exterminated. If the savage does not till the land, it is because he despises a sedentary life, preferring the illimitable attractions of the desert, to be found in a nomad life: he knows not what ambition is, and is content with food and something wherewith to clothe himself. When the Tehuelches learn our civilisation before our vices, we shall find them on estancias on the Gallegos, working the same as our gauchos.

The River Gallegos has a mean velocity of from 4 to 5 miles an hour, and is fed by the snows which fall in winter on the volcanic table-lands. It has two sources, which unite after a short distance, and two small tributaries to the south. The valley could be utilised for agriculture: on both banks mounds of lava are met with towards the south, forming black rocks, with broken fragments like columns, wearing an appearance like an ancient city in ruins. Fire and ice have left their stamps on this region. All these peaks, many of them marked on the maps, from this to Cape Virgin, are extinguished volcanoes, at one time submarine, their maximum height being 1000 feet. My observations, through the boiling point test, show the mean height of the region to be 860 feet.

The peaks of lava under the ancient bed of the sea inclined as the tertiary table-lands rose, and some of them appear 200 feet above the surface in fantastic shapes, as at Mount Aimon, Volcan, Asses' Ears, &c. These eruptions extend W.N.W. to 40° N., and are, I believe, independent of the Andine volcanoes—the theory that this lava came from the Andes being quite puerile. Between Gallegos and the banks of San Gregorio, where these peaks are found, they have risen more irregularly than in other parts of Patagonia, while the ice has left more decided marks. The road winds capriciously now through low valleys watered by pools and rivulets, then through sterile tracts, and anon over elevations covered with grass, and here and there an erratic rock. At the confines of the Meseta (table-land) the face of the country changes. To the right the blue and white line of the snow-clad mountains stands out in relief from the dark and tempestuous western sky. To the left the summit of San Gregorio: then the narrows of the straits, like silver ribbons; and further off, of a faint rose colour, enveloped in fog and lurid fires, characteristic of the savage inhabitants, lie the Fuegian plains. In front, on the Straits, at the high peninsula called Brunswick, the landscape is even more verdant and undulating than the Pampas of Buenos Ayres, with here and there mineral veins and small woods of the "Calafate" (Berberis), which produces a delicious fruit; there are also pools of fresh and salt water—in fact, the whole has the aspect of an English park. The road winds southward close to a low range of glacial hills on the west (probably where some prehistoric glacier rested), and is crossed by the Dinamarqua, a rapid stream bounding on through aquatic plants, watering a large tract of fertile land covered with *humus*, and finally falling into the Straits. There are also numerous rivulets. The grass is so high about here that the traveller often falls into old wells, especially near the road. Amongst them is one called "Queen Victoria's Well," so called from a Tehuelche Indian woman, who was called "Queen Victoria" by her tribe, falling into it.

This beautiful region, where life is easier than in any other part of Patagonia, is the result of one of the most terrible changes of the earth. The glacial period here displays all its terrors; due to the gigantic glaciers that in past ages advanced to the Atlantic, tearing enormous fragments of even 1000 cubic metres from the mountains, borne onwards on floating ice, leaving vegetable deposits that will enrich the pioneer of the future. The changes in Patagonia from the commencement of the Tertiary epoch show the prodigious force of nature. In the Eocene epoch the earth rose from the ocean, feeding monstrous terrestrial fossils, like the Dinoceras of North America, and which, hitherto unknown here, it has been my lot to find in Patagonia. Then it sank for unknown ages, which geology cannot count. Again it rose producing those enormous trees whose petrified trunks are found near the Cordillera, and curious animals like the Nesodon, Anoplotherium, &c., while the sea sheltered seals, sharks, dolphins, and mollusca, some of them of gigantic size, like the Patagonian oyster. Then this layer sinks again to the depths of the sea, 800 feet more or less, and under it masses of basalt were deposited. After the sea of fire came the sea of ice, adding 250 feet of detritus to the crust. Then Patagonia threw off its icy shroud, rising in some places 3000 feet above sea level; and it still continues to rise. On the coasts of Buenos Ayres I have seen living shells similar to those found in the Straits at 100 feet elevation.

I must no longer enlarge on these interesting phenomena, but proceed to show how valuable these

southern lands are to Argentines. Cape Negro is a beautiful tract, on which there is a Chilian estancia. For ten miles the coast is covered with erratic rocks and trunks of trees, the green woods skirting it making the scene delightful to the traveller's eye. Far south the summits of Mounts Sarmiento and Darwin are seen. Sandy Point is fifteen miles from Cape Negro, across the stream Tres Puentes, on whose banks there is a saw mill; there is a fertile plain between the Tres Puentes and the Rio de Oro (Golden River) in whose sand grains of the precious metal are found.

The Brunswick peninsula, on which is Sandy Point, is covered with rich vegetation, making the geologist forget what it was when covered with ice. The soil is very fertile. There is a colony of Chilians and Swiss at "Agua Fresca," south of Sandy Point, besides others on the Rio de los Ciervos. Coal is found in the peninsula, recalling the rich vegetation that covered Patagonia at the beginning of the Tertiary or end of the Secondary epoch.

I have now only to refer to the climate of these Austral regions. In the western part rain and storm are continual, and glaciers extend to the sea: it would be hard to populate it, but on the east side the climate is more favourable, and those sudden and terrible atmospheric changes that cause so many shipwrecks are unknown. I can assert from my own observations and what I have learned that the climate from the River Santa Cruz to Cape Horn may fairly be compared to that of Great Britain, from the English Channel to the North of Scotland. On the high lands it is dry, with night dews, but little rain, In winter snow falls, but in spring, summer and autumn the climate is delightful, with some few days of intense heat.

At the Straits it rains oftener, about a third of the rainfall in Buenos Ayres, but the snow keeps the soil moist. The winds are very variable, those from the Poles prevailing. January, February, and March are dry; snow begins to fall in the middle of April. In winter the mean temperature at Sandy Point is 3° C. above zero: in September and October storms; November and December dry again. All this makes the country healthy, and epidemics are unknown.

The vegetable productions are numerous. Potatoes yield 30 to 50 for one, and flourish splendidly at Santa Cruz. Wheat can also be grown there and at Rio Chico, but not at Sandy Point; but oats, barley, and above all vegetables. grow to a prodigious size at the latter place. Tierra del Fuego, at Isla Grande, has a climate like the Falklands, where sheep flourish so well. Southwards at the English settlement of Oostravia, 20 leagues north of Cape Horn, cattle thrive and some vegetables also: the aborigines live almost naked, and humming birds and parrots are seen, so the climate cannot be very inclement.

Here we are at the Andes chain, which has, as everybody knows, two subsidiary chains, one on the east or Argentine side, the other in Chile. The central chain, which appears of more modern formation, has the loftiest peaks, which decrease in height towards the south, where there are passes, such as those at Ranco, Villarica, Bariloche, and Pedro Rosales, opposite Lake Nahuel-Huapi; that visited by Musters, opposite Teckel; that of the River Aisen, in 45°; and that at 50° 40', more or less, a little south of Mount Stokes, and which can be seen, covered with snow, from the extremity of Lake Argentino, where the most ancient formation of the eastern pre-Cordillera disappears. The Andes chain divides at this point, and this wonderful mass of dizzy peaks, almost vertical precipices, domes and towers, covered with the eternal snows that reflect the colour of the heavens, changes its direction imperceptibly to the S.W., and disappears at 53° S. lat. Between the 51st and 53rd degrees the last spurs of the great chain separate and scatter in a labyrinth of deep and narrow channels, which fully accounts for the sufferings of the British sailors who transferred to maps the lines drawn here by the Creator. Little Hope Bay, Last Hope Bay, and Mountain Channel, at the foot of Sarmiento Cordillera, are almost at the extremity of the real Cordillera, and Mount Burney alone, the last high peak of the chain, is in King William's Land. The last outlying spurs of the Andes are a little further south, terminating near Cape Providence, where, according to Agassiz the Andes proper begin. About here the backbone of America disappears in impenetrable forests.

The Cordillera on the Chilian side rises in the Atacama desert, and forms a chain of granite rocks and islands, separated from the continent by winding channels which are a submarine continuation of the great longitudinal valley. In the Adelaide, Santa Ines, and Clarence islands lovely hills with immense glaciers on their sides are seen. At the S.W. point of Tierra del Fuego the chain changes its direction and forms a barrier against the Antarctic waves. At its two extremities are Mounts Sarmiento and Darwin respectively, the granite formation reaching in some places 3000, in others 7000 feet in height. This chain, which appears to be distinct from the Andes proper, terminates at Mount Darwin; the latter, according to Agassiz and Skyring, terminates in King William's Land; and King considers they end in the neighbouring isles. Darwin declares they end at Mount Darwin.

The other high lands of these southern regions, east of this chain, are of clay and slate formation, with quartz veins, as in King William's Land and nearly the whole of the Brunswick peninsula. This formation is also seen in Dawson Island, extending to the south of Tierra del Fuego, excepting its north-eastern part. This clay and slate formation is visible over all the west of the Argentine Republic. The western isles of Tierra del Fuego are of granite and changing formation; the highest peak is 1743 feet, in Hermit Island, near Cape Horn.

There is a great future in store for these Argentine regions. Patagonia, from Bahia Blanca, has an excellent climate and everything necessary for a great producing country, while the Straits offer paramount advantages for settlements; and if their coasts were populated, the disasters from shipwreck might be greatly diminished. In 1875 the Chilian settlers at Magellanes saved 146 persons. If the Argentines had a port near the Cape this number could easily be trebled. The gallant Argentine sailor, Captain Piedrabuena, has saved numerous lives here within the last twenty years. It would be an honour if the Argentine Government established the first life-boat station on States Island. For the present, however, an agricultural colony would be sufficient.

ASIATIC TURKEY.

UNDER the above heading, an interesting letter from Mr. Grattan Geary, Editor of the *Times of India*, appeared in the *Times* of the 25th of July last. It contains a most valuable description, from personal observation, of the actual condition of the Sultan's Asiatic dominions, and the following extracts will doubtless be of interest to most of our readers.

"Setting out from India in the middle of last March," says Mr. Geary, "I made my way up the Persian Gulf in one of the British India steamers to Bussorah, and thence up the Shatt-el-Arab and the Tigris to Bagdad. Crossing Mesopotamia, I visited the sacred cities of Kerbela and Nejef, west of the Euphrates. Then, returning to Bagdad by Hillah and Babylon, I set out northward along the eastern edge of the valley of the Tigris for Mosul, whence my route lay westward through northern Mesopotamia to Belejik, where I once more crossed the Euphrates. Thence by Aleppo I got to the Plain of Antioch, and, crossing the Beilan mountain, I reached Alexandretta on the Mediterranean, the proposed starting point of the projected Euphrates' Valley Railway. . . .

"The Shah of Persia is, nominally at least, the sovereign of the north-eastern littoral of the Persian Gulf throughout nearly its whole extent. Of late years, the Turks, who have conquered nearly the whole of the interior of Arabia, have extended their rule over the Arabian or south-western coast of the gulf. But the gulf itself owes its present tranquility to British power. . . . . From motives presumably of delicacy none of the protected islands or Sheiks have been asked to contribute a farthing of tribute in return for the security and peace which they enjoy under the protecting shadow of the British flag. We have neglected to acquire any legal right to their fidelity or allegiance. The Turks when absorbing strip after strip of the gulf littoral showed themselves perfectly aware of this. They denied point blank that we had any right to object to their annexations, as we had never exercised the rights of sovereignty over the Sheiks in whose fate we interested ourselves.

"But though the Turkish power has been established over a considerable extent of the Arabian coast line of the gulf, it is on passing the bar of the Shatt-el-Arab that we enter the real portal of the Ottoman Empire in these parts. This magnificent river is formed by the united waters of the Euphrates and the Tigris, which meet and mingle at Kurnah, the southern extremity of Mesopotamia, whence they roll down a mighty volume 140 miles to the head of the gulf. At its mouth the Shatt-el-Arab appears to be a continuation of the gulf, for it is so wide that the banks on either hand are invisible from the deck of the steamer. But a vast bar composed of soft mud marks the line where the gulf ends and the river begins. The water over this bar was in March last—when the river was nearly at its highest—only 11 feet deep. The British India steamship 'Pachumba' drew 13 feet 6 inch., but she passed the bar by going at full speed through the yielding mud. Once inside the bar, there is a depth of six fathoms, and that continues for upwards of 100 miles—in fact, up to Kurnah. . . . .

"When steaming up the Shatt-el-Arab to Bussorah you have Turkish territory on the left hand and Persian on the right. The land is precisely the same on both banks—smooth as a bowling-green as far as the eye can see, fertile in the highest degree, and, as if for convenience of irrigation, scarcely 2 feet above the river level. The wash of the steamer often sends the water over the edge of the plain on to the grass. Cultivation is easy enough, but it is only on the Turkish bank that extensive or systematic cultivation is carried on. The land on the Persian side is for the most part comparatively neglected. The date groves are all of a bygone period, and the trees are not renewed. There are no new plantations. For many miles south of Bussorah, and for forty miles above it, the Turkish bank presents a very different spectacle. The desert is being rapidly reclaimed and an immense extent of ground has been brought into cultivation. Plantations of young date trees stretch league after league up the river. These plantations go back into the desert from four to six miles. To irrigate them little canals from 5 feet to 6 feet in width and about 4 feet in depth are cut at right angles to the river. The cutting of a couple of these canals and the setting in regular rows of date saplings by the thousand—not a very expensive process—form a plantation which in four years brings in a considerable revenue. Grain is cultivated between the trees. Great quantities of the dates thus grown are exported to Europe and America. In England the inhabitants of the Black Country have, curiously enough, a great liking for this sweet and nutritious food. So great is now the foreign demand for dates, that, notwithstanding the enormous increase in production, the price of dates has risen 400 per cent. at Bussorah within the last six years.

"It may be asked why the desert should be in course of reclamation along the Turkish bank of the Shatt-el-Arab, while land is going out of cultivation under that which owns the sway of the Shah. The answer to such a question is simply this, that the Persian Government is as oppressive and deadening in its tyranny as that of the Ottoman Empire is in Europe popularly supposed to be. . . . . The difference between Turkey and Persia is illustrated by the fact that while torture of all kinds, including the bastinado and impalement has been abolished for the last 30 years in the Ottoman dominions, it is at the present moment the practice in Persia to wall-up criminals alive, and the bastinado is a common form of punishment. The roads from Bushire to the interior have been recently made quite safe—so I was informed in Bushire itself at the end of March last—through the firmness of the Prince Governor of Shiraz in building up alive in a wall every robber caught or said to be caught red-handed. Bussorah, once a city of 300,000 inhabitants, is now a very small place. But since the opening of the Suez Canal it has begun to revive, and this spring as many as 11 European steamers were anchored in a line in the river opposite its grain stores, loading for the Indian and European markets. A number of substantial buildings in the European style have been erected, and wharfs are being constructed along the river bank. The climate is by no means as deadly as it is supposed to be, though the overflowing of a vast tract of country a few miles to the west of the town through the bursting of the banks of the Euphrates 200 miles to the north gives rise to a good deal of malaria in autumn.

From Bussorah to Bagdad two English steamers of light draught, but of considerable tonnage, carry passengers and goods. There are also seven Turkish steamers similarly employed. The English company are anxious to get permission to start a third steamer, for the trade on the river is increasing year by year and is very profitable. But the Turks have hitherto shown no desire to accede to the wishes of the company. Possibly, all objections will now cease, and the number of steamers plying on the Tigris will be indefinitely increased. On the Euphrates the trade is quite undeveloped. Every year the Turkish Government, or the *concessionnaires* who work the Government steamers, send a steamer up the Euphrates to Bir. It is always crowded with passengers, though the voyage is of very uncertain duration. The Euphrates is so shallow that steamers intended for it should not draw more than thirty inches. The Tigris is much deeper, and some of the boats now plying on it draw 4 feet when loaded.

Bagdad is 510 miles from Bussorah by the river, and, the current being strong, it takes a steamer on an average nearly five days to accomplish the distance. The rich pasture land on both banks of the Tigris, nearly as far as Bagdad, is in the hands of the nomadic Arabs. Immense flocks of sheep graze over these limitless plains, but they are not always the property of the Arabs in whose care

they are. Many of the flocks belong to rich merchants of Bagdad, who pay the Arabs for looking after them. The 'children of the desert' are punctiliously honest in fulfilling engagements of this kind entered into with the Jews and Armenians of Bagdad. For some years before the outbreak of the late war the Turks had succeeded in reducing the powerful tribes in this part of the country to something like order. But the withdrawal of the troops from the Pashalik of Bagdad to fight the Russians has allowed the old habits of the nomads to revive. . . . . There is a considerable degree of anarchy, but as yet, at all events, there is nothing like an organised rebellion against the Sultan's authority. When the troops return from the seat of war the troubles now prevailing will, no doubt, soon subside. There is a tendency among the Arabs to settle on the banks of the river, and I saw many mud-built towns which had within the last few years sprung up upon sites formerly occupied at intervals by tents or reed huts only. When the Arab becomes 'sedentary' he soon becomes comparatively civilised.

"Bagdad is not now the great city which it was formerly, and will assuredly once again become when the resources of the Tigris Valley are properly developed. Its population numbers about 100,000, living in houses constructed for the most part of sun-dried bricks. It is a city of mud diversified by countless domes and minarets in blue porcelain. The streets are narrow, tortuous, unpaved, and filthy. Its brick fortifications are dismantled and useless, but it has some splendid modern barracks, built with all the latest improvements by Midhat Pasha, who when Governor-General began many valuable works, and finished some of them before he was recalled. A tramway 3 miles long, from the city to the large suburb of Kasmain, was made by that energetic Pasha. . . . .

"Of late great tracts of land in the neighbourhood of Bagdad have been laid down under corn. Last year 50,000 tons of grain were sent down the river from the city to be exported from Bussorah. When I was there in April fully 30,000 tons more were in the granaries ready for exportation; but the authorities, acting under the constraint of the population, who feared a famine if corn were exported while the prospects of the new harvest were still uncertain, prohibited shipments, to the great disgust of the mercantile community.

"Starting from Bagdad early in April for the great shrines of the Shiah Muhammadans in the south-west, I had an opportunity of seeing something of Mesopotamia and the country beyond the Euphrates. The Arab tribes were a cause of uneasiness owing to the absence of troops; but, though they sometimes pillage villages and caravans, they usually employed their superfluous energies in raids upon one another. Land is being extensively brought into cultivation on the banks of the Euphrates, about Mosseyib and as far south as Hillah and beyond. Small irrigation canals are cut which the superabundant waters of the Euphrates fill to overflowing. That river, indeed, threatens vast tracts of country with ruin. It is continually bursting its banks and inundating hundreds of square miles, converting the land first into a lake and then into a marsh. The waters of the Euphrates were pouring in a torrent into the Tigris 3 miles from Bagdad while I was there. In the west it has formed a vast lake, extending from near Mosseyib southwards, beyond the latitude of Bussorah. I sailed in a large boat for twelve hours across one of the angles of this fresh-water lake, which in autumn will be a deadly marsh. The Turks have engineers, some of them Europeans, continually pottering over the embankments of the river; but it is evident that as yet they have not learnt how to keep the mighty stream of the Euphrates under proper control. The great system of canals with which the old Babylonians once carried its fertilising waters over every acre of Southern Mesopotamia are still intact. Their levels are still the levels which would best serve. All that is wanted is that the channels should be cleared of the sand which chokes them. If that were done, they could be turned to practical account once more, both for irrigational and transport purposes. They would besides carry off from the river the flood waters which now overflow its banks and desolate the country.

"In spite of all drawbacks, however, large expanses of the rich soil are being yearly brought into cultivation. The Jews of Bagdad advance the necessary capital to Arabs and others, who cut the irrigation channels and sow the seed. The yield is always great, and after the Government proportion of the crops is taken the rest is usually divided between the cultivator and the capitalist. Dates are largely cultivated along the banks of the Euphrates within the limits I have mentioned. The great want is the means of carriage: to carry four shillings' worth of produce on donkeys' backs from Hillah to Bagdad costs six shillings. The consequence is that immense quantities of grain and dates rot unused in and around Hillah every year, for the carriage to Bagdad or Bussorah would eat up the profits. A tramway, or, still better, a railway from Bagdad to the Euphrates at Mosseyib or Hillah (Babylon), and thence onward for some 20 miles to the town of Kerbela, which is annually visited by 120,000 pilgrims, would, in the opinion of all the Europeans in those parts with whom I have spoken, pay as handsomely as the tramway to Kasmain.

"Kerbela is a walled town of 60,000 inhabitants, of whom 10,000 are natives of British India and Persia, attracted to the spot by its great sanctity. It is surrounded by forests of date and mulberry trees, and the approach along the broad canal leading to it from Mosseyib is wonderfully picturesque. . . . .

"Having returned to Bagdad from beyond the Euphrates, I set out for Mosul, opposite the site of Nineveh, at the head of the navigable waters of the Tigris. I travelled along the foot of the hills to the east of that river, and about forty hours from Bagdad quitted the country of the Arabs to enter that of the Kurds. The country is generally under cultivation, barley being the principal cereal grain. The Kurds who are settled on the soil are much more industrious than the Arabs, but the nomadic Kurds are particularly truculent; they are born bandits, whom it is dangerous and difficult to avoid. The Bedouin will rob the traveller as a matter of course, if circumstances are favourable, but he will not kill unless an unjustifiable, because unsuccessful, resistance be offered. But the genuine Kurd kills as well as robs. . . . . I found all the wayfarers through the Kurdish country much more nervous and disturbed about the dangers of the road than I had found similar people to be in the regions where the Arabs were about. The caravans were better provided with firearms, and were much more imperative in challenging all who came in their direction. The Kurds from the mountains are perpetually raiding on the villagers, carrying off sheep, and goats, and corn. I was told of one case in which a clean sweep had been made of everything in 60 villages, the Kurds saying that for the last 20 years the Turkish Government had kept them from levying what was due to them, and now that there were no troops in the way they had come to collect the arrears. But that was to the west of Mardin, and I am now speaking of the country between Bagdad and Mosul. This region is, as I have said, fairly cultivated, and there are towns and villages of some importance along the track which the traveller who rides past, as I did, has to follow. One of these towns, Kerkook, is governed by a pasha, who has one wife, an Englishwoman. He is said to be an enlightened man and a good ruler. The population of the town is 20,000. Erbil (Arbela) has 12,000 inhabitants. In the hills close by are fountains of petroleum which have been running ever since Alexander the Great's time. The Turkish Government is working one of these fountains, and the steam flotilla on

the Tigris uses the oil as fuel. When the great railway from the Mediterranean to the Persian Gulf is made it it will no doubt be carried to the east of the Tigris, along the present post route, so as to profit by the local traffic which can undoubtedly be obtained in the considerable towns, of which I have mentioned only two.

"Mosul is a large and important city, having the advantage of Bagdad in being mainly built of stone instead of brick or mud; but it is very filthy; its streets are narrow and crooked, and there is a visible tendency to decay everywhere. Here I first came upon a large Christian population, a considerable number of the towns-people being Christians of one sect or another. Their conduct, I am sorry to say, is not edifying. At three of the churches which I visited, Turkish soldiers were on duty to prevent the congregations from coming to blows among themselves. The Chaldean Christians are in a state of civil war about the election of a new patriarch in the place of one who has just died in the odour of perfidy. He had accepted a Papal Bull making portentous changes in the constitution of the Chaldean Church. The bishops approve the bull, which puts a great deal of power, hitherto wielded by the priests and laity, into their hands. The priests and laity naturally disapprove it. The consuls of France and England, the ambassadors of those two powers at Constantinople, Austria, the Pope, the Porte, the Pasha, the Mussulman roughs, and the noble art of self-defence have been all in turn appealed to or employed in this great quarrel. Were it not for the Turkish regulars at the church doors, the two factions would fight it out at the very altar. A very similar state of things prevails between the Syriac Catholics and the Jacobites; two of their churches are saved from the desecration of a free fight solely by the presence of Turkish soldiers. Yet every native Christian you meet will tell you with held breath that the Muhammadans of Mosul are dreadful fanatics, and that the Sheikh of the great Mosque has only to go out on to the gallery of the great minaret and give the word to bring about a general massacre of the Christians.

"From Mosul the post route follows for a couple of days the line of the retreat of the Ten Thousand and is nearly north-west. Then it crosses the Tigris at Jezireh, and follows a devious course among the Kurdish mountains in the north of Mesopotamia, passing through the important towns of Mardin, Diarbekir, and Orfah, and so on to Belijik, where the traveller crosses the Euphrates and enters Northern Syria. Nearly all the higher plateaus and all the peaks of the mountains along this route were covered with snow in May last, and the climate was cold as an early English spring. A considerable area of the so-called desert is under cultivation. Villagers are numerous, but so, unfortunately, are the Kurdish freebooters from the more northerly hills; and the villagers complain bitterly of their depredations. The Government has taken 500 Circassians into its service as *gendarmes*, and they are of great service. Both Kurds and Arabs have a great dread of the Circassian thoroughness in a fight. Unhappily, the Circassians (when not on duty as *gendarmes*) are more audacious robbers than either Arab or Kurd, and they are more dreaded by the villagers. This is in a great measure due to the mistake of the Government in refusing to recognise the authority of the Circassian chiefs over their followers. The chiefs could keep their people in some sort of order if the Government would empower them to do so. As it is, the law is too feeble a restraint, and the patriarchal rule of the chiefs being set aside the wild Circassian does whatever he pleases. His great physical strength and his perfect mastery over his weapons, of which he always carries a varied assortment, make him the most formidable of all the robbers in these parts. My experience was confined to those who had been taken into the Government service, and I found them to be very far the best at escort duty that I had on the whole journey. They were obliging, hearty, good-humoured fellows, never afraid of exertion or exposure, and never inventing ingenious fictions as an excuse for coming to a premature halt. There is fine material in these Circassian settlers who have so unenviable a reputation. Possibly in the reorganisation of Asiatic Turkey, which cannot now be long delayed, they will be turned to good account.

"Having passed through the substantially-built cities of Diarbekir with its 60,000 inhabitants, and Oriah with its 50,000, I came as I have said, to Belijik, which has a population of 12,000 in its houses of chalk. The Euphrates here is as wide as the Thames at Greenwich, but it is very shallow. I saw a kafila of camels ford it, and in the middle of the river they seemed to be walking on the water, which was there not a foot deep. Onwards to Aleppo the route lies over a chalky formation. That fine city is well built of freestone, very similar to that of which modern Paris is built. There are, I am told, 200 or 300 Europeans settled there, and the shops are more European and less Asiatic in appearance than any others to be seen east of Smyrna. When the route of the great railway is finally laid down, it will assuredly pass close to Aleppo. But from Aleppo to the plain of Antioch there is a succession of rolling hills to be surmounted, which will prove a serious difficulty to the engineer who desires to combine economy with despatch. It is possible that some route may be found which will turn these hills; but if such a route exists, it must be very circuitous, or the post would now be carried over it. The plain of Antioch, which stretches for eight or ten miles from the foot of the last of these rolling hills to the foot of the great Beilan mountain, is in half its extent a deep and formidable marsh, in the pools of which flocks of pelicans disport themselves. There are the remains of two great causeways over the plain, one constructed by the Romans and the other by Sultan Murad. Both have been nearly swallowed up in the deep and treacherous soil. The Beilan Pass itself is not so difficult as it looks. The highest point traversed by the very good road over it is only some 16,000 feet above the sea level. All the gradients are easy for horses. It is for engineers to say whether they can be made easy for locomotives at a reasonable outlay. Once over the Beilan, the level and pestilential plain to the edge of the Mediterranean, on which Alexandretta is built, lies before you like a map. The distance is about 15 miles. Alexandretta is not a port; it is a roadstead which is quite open to the southerly and, more or less, to the westerly winds. Between Alexandretta and Aleppo the trade is so great that 10,000 camels are employed on it. If a railway were constructed, it would be difficult to assign limits to the development of the trade of this region. A railway from the Mediterranean to the valley of the Euphrates and the Tigris would pass through countries of great natural resources, and would tap provinces of wonderful fertility and boundless extent. It is a mistake to suppose that Asiatic Turkey is now 'decaying.' Nearly everywhere throughout a journey extending over 1500 miles I saw evidence of progress rather than of decay. The population is scanty, but it is robust and well fed, and with proper inducement would work well. When you can get men any day to carry three hundredweight apiece for a few piastres there can be no want of hard muscle. The lax and inefficient rather than oppressive administration under which the country has hitherto languished will now undergo a thorough reform under British supervision. The corruption of the small officials—and even of some of the great officials—may be expected to cease out of the land when salaries are regularly paid and peculation or bribery is followed by inevitable dismissal. The Arab and the Kurd can easily be brought to order by the establishment of a few military posts. What then will stand in the way of the development of the resources of Asiatic Turkey? British enterprise and British capital will furnish the means, and all the world, we may hope, will profit not inconsiderably by the result."

Reviews.

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WEST YORKSHIRE.*

Sir Roderick Murchison, in his anniversary addresses, and on other occasions, often dwelt upon the close connection between the science of geology and the study of geography. This connection becomes more evident as the science of geography advances, and it is now an accepted fact that the physical geography of a region cannot be understood without a knowledge of its geological character. The exceedingly interesting work on West Yorkshire, by Mr. James W. Davis, which has just been published, is well worthy of the careful study of geographers, with reference to this connection, for it treats exhaustively of the chief bases on which physical geography must rest, namely geology and climatology. While the geologist is dependent on geography for those surveys and maps without which he could not define the relative positions of his formations, the geographer, on the other hand, is unable to describe, with the necessary precision, the physical aspects of a region, and the causes which have produced them, without the aid of the geologist.

The West Riding of Yorkshire, and still better the whole county, is admirably adapted both for the study of the various geological formations, and for the appreciation of the close connection between geology and geography. The whole of the fossiliferous strata of the British Isles are well represented in Yorkshire, and all but the liassic, oolitic, cretaceous, and tertiary are met with in the West Riding. At its north-west corner there is a series of mountains composed of Silurian rocks, which abut against the mountain limestone of the Carboniferous period. Then follow, in ascending order, the Yoredale series of rocks, the millstone grits and coal measures, then the magnesian limestone of the Permian age, and lastly the triassic sandstones, which are to a great extent overlaid with post-tertiary deposits, up to the banks of the Ouse, the eastern boundary of the Riding.

The positions of the great valleys in the western mountainous region of Yorkshire are greatly due to lines of weakness caused by faults; and the system of drainage having been thus determined, the denuding agents, water and ice, have been concentrated in the areas contiguous to the faults, wearing them down still deeper. The Silurian formations are brought to a sudden termination to the eastward, by the great Pennine Fault running north and south. The Craven Fault, running W.N.W. and E.S.E., also causes great inequalities of the surface. It is now the received opinion that the apparently violent breaks and contortions have been produced by lateral pressure acting over long periods on the unequal thickness and elasticity of the crust of the earth. The series of anticlinals parallel to the Craven Fault exhibit on the surface a number of rounded hills, and where the interior is exposed in natural and artificial sections, the limestone and shales are found to be contorted and bent on themselves. That so hard and brittle a substance should be thus folded without being broken indicates a long-continued and gentle lateral pressure, clearly due to the powerful action producing the fault, which must, therefore, be also the result of a force prolonged over an indefinite period. The Craven Fault is traced along the limestone scars behind Settle, and the escarpments of Malham Cove and Gordale Scar. The Pennine anticlinals extend, north and south, from near Shipton into Staffordshire, and there are several smaller faults.

A study of these faults is essential to a comprehension of the relations of the various formations that are affected by them. The rocks forming the Pennine anticlinal dip to the eastward, giving place to the upper beds of the millstone grit series; and the grit rocks form a basin-shaped hollow, in which are deposited the coal measures of South Yorkshire, the whole carboniferous series dipping unconformably beneath the Permian limestone escarpment which runs north and south across the country, and is overlaid further east in the Vale of York, by the triassic sandstone.

In the present work each formation is described in detail, commencing with the Silurian rocks in the far north-west; with lists of fossils, and numerous illustrative sections. Space will not admit of our following Mr. Davis into the detail of his interesting record, but we can recommend its perusal to geographers as both suggestive and instructive; while we have never read a treatise which so clearly shows the close relation between the two sciences of geology and geography. This is especially the case in the chapter on the cave and lacustrine deposits, the warp clays and estuary beds of the post-tertiary period.

In the second part of the work, where the physical geography of the West Riding is discussed, it will at once be seen that the subject cannot be properly grasped without a previous careful study of the geological section; and the concluding portion on the distribution of plants over the various river basins is a masterly essay on botanical geography. The volume is furnished with two admirable coloured maps on a scale of four miles to the inch, one showing the geological formations and the other the river basins with reference to botanical divisions. The second volume containing the "flora" proper and the climatology of the West Riding is not yet published. The two volumes will form a most valuable work; and upon the information contained in them might well be based another volume on the agricultural statistics of the West Riding, with maps similar to those constructed by M. Delesse to show the different soils in France, and by Mr. Richardson to convey to the eye the various agricultural rentals of the county of Edinburgh.

The present work on the West Riding of Yorkshire is, however, complete in itself. Since the publication in 1853 of that most popular volume, *The Rivers, Mountains, and Sea Coast of Yorkshire*, by Professor Phillips, which preceded the Memoirs of the Geological Survey for this part of England, there has been no book of the same kind which can be compared in merit with that now under review. No library in Yorkshire ought to be without it.

* *West Yorkshire. An Account of the Geology, Physical Geography, Climatology, and Botany.* Part I. Geology. By James W. Davis, F.G.S. Part II. Physical Geography and Botanical Topography. By James W. Davis and F. Arnold Lees, F.L.S. Maps and plates. (Lovell, Reeve, and Co., 1878.)

MOUNT SINAI.*

THAT indefatigable writer and traveller, the late Dr. Beke, about forty-four years ago, announced the strange theory that the land of bondage of the Children of Israel, which by the common assent of ages is believed to be the Egypt of profane history, was a distinct and separate kingdom lying to the east of the Isthmus of Suez, and thence extending to the land of the Philistines, a kingdom which in the course of time lost its independent existence and was merged in its more fortunate western neighbour, Egypt, whilst it became itself utterly waste and desolate. And, consequently, that the Red Sea, through which the Israelites passed in their exodus, was the Gulf of Akaba, and not, as was universally believed, the Gulf of Suez. This theory Dr. Beke maintained to the end of his life with much learning and ingenuity, and as a corollary to it he argued that Mount Sinai was to be sought not where universal tradition has placed it, in the peninsula of Sinai, but to the north-east of the northern termination of the Gulf of Akaba. His last journey was undertaken in his enthusiastic resolve to fix the site of the true Sinai. Before he could complete the *resumé* of this journey he died, and his widow, who is a firm believer in, and an able exponent of his views, has published in this handsome volume the letters or rather the journal he wrote for her during his absence, together with three chapters written by himself in support of his theory.

It would be impossible without far more space than is at our command to enter into a description of the many arguments adduced by Dr. Beke in support of his favourite theory; we would however remark that it is *a priori* exceedingly improbable that the entire agreement of the learned for so many ages, on such a subject as the identity of the country of the Israelitish bondage with Egypt, should have been based on error; and this is the more improbable as this country, whether Egypt or not, is mentioned not once or twice, but continuously in the Old Testament for a period of more than 1300 years. St. Matthew certainly understood this country to be Egypt in his application of the prophecy of Hosea, "Out of Egypt have I called my son," to the flight of Joseph with our Lord and the Virgin into Egypt. And even more improbable is it that a country of such power and civilisation as this is represented in the Old Testament to be should have entirely disappeared, and left no trace of its existence in profane history. Dr. Beke sets no value on tradition and adduces two amusing instances of the rapid growth of popular beliefs. He tells us that in the neighbourhood of Thebes, the natives identify Dr. Lepsius with Cambyses! the second instance we must give in his own words:—

"In 1852 a village called Harran was discovered by the Rev. Joseph Leslie Porter, precisely where eighteen years previously I had said it ought to be looked for, without his being at all conscious of the importance of this discovery; and nine years afterwards, namely, in 1861, my wife and I went to the spot to verify my indentification of it, just as I now propose visiting the true Mount Sinai. Of our pilgrimage to Harran a narrative was given by my wife in her work, *Jacob's Flight*. At Harran we discovered a well which we named *Rebekah's Well*, because it was in my opinion that at which the daughter of Bethuel was met by Abraham's steward. At that time no designation of any kind had been given to this well by the people themselves; and, though we were most minute in our inquiries, we could not learn that any history or tradition whatever, was attached either to the well or to the troughs near it used for watering cattle, as it is, in fact, expressly recorded in Mr. Beke's work. Indeed, when we first arrived at Harran, the people of the village denied altogether the existence of any well whatever, as our old friend, Dr. Wetzstein, who was with us, can testify. It is scarcely necessary to add that the inhabitants of Harran had not the remotest idea of their village having been the habitation of El Khalil, 'the Friend of God,' as the Patriarch Abraham is usually called. But they were not slow to adopt my identification of it; and when Major Wilson, R.E. (in 1865), and Mr. John Macgregor, of the 'Rob Roy,' visited Harran in December, in 1868, just seven years after my wife and I were there, he was shown what he described in the *Record* newspaper, as a very curious well called 'Abraham's Well,' adding that he had never met with stones and cistern more worn than those; the well thus shown to him as 'Abraham's Well' by the canny natives being our 'Rebekah's Well' which my wife discovered in 1861. But this is not all; two years later, when Captain Burton was Consul at Damascus, he wrote in the *Athenæum* that he knew the Haran well to be called 'Abraham's well' by many Syrian Moslems who had never been to that place, and who certainly never heard of Dr. Beke's visit to it in 1861. And since then, on his return to England, he informed me in person that the Moslems of other places besides Damascus all speak of 'Abraham's Well' at Haran, as a matter of notoriety!"

But these are the traditions of ignorant peasants, the belief of the learned cannot be placed in the same category.

We will now turn to Dr. Beke's journal. We can readily understand the tender regard for her husband's memory which induced his widow to publish this journal at full length, nor can we find fault with her for doing so, but we think it is to be regretted that the task was not intrusted to one less nearly connected with Dr. Beke, who would not have scrupled to cut out those portions of the journal which were designed for Mrs. Beke alone, and can have no interest for the public. Dr. Beke set out in December 1873, accompanied by Mr. John Milne, a geologist, whom he seems to have found both an agreeable and most useful companion. Three weeks were spent in Cairo whilst Dr. Beke was preparing for his voyage and return journey by land; he was very well received by the Khedive, who granted him the use of a small screw steamer the 'Erin.' The changes for the better in Egypt since his first visit to that country made a deep impression on Dr. Beke. He says:—

"The country is so changed since I first knew it, that it does not look the same: it is well cultivated, and looks most rich and flourishing, being well watered from canals and ditches. . . . . Many of the villages were much improved, and there were signs of houses for the labourers approaching more to a European type than the mud-huts in which they have hitherto lived. . . . . The reason of the rains, which now visit this country so much more than formerly appears to be the greater cultivation, and also the planting of trees which not only line the road, but are in parts so plentiful as to give it almost the appearance in places of being well wooded; it certainly does not look like Egypt. In the villages far and near one sees the tall chimneys of factories, which tend to increase the illusion, though the mixture with them of the native mud-huts soon destroys the charm. Ophthalmia, the great curse of the country, is certainly on the decrease, being not only less frequent, but also in a milder form. The railway, above all, is a great civiliser, from its opening up the country, facilitating the transport of its produce, and bringing the people of one part into communication with those of another."

On the 14th of January 1874 they left Cairo for Suez, where they embarked on board the 'Erin,' and

* *The late Dr. Charles Beke's Discoveries of Sinai in Arabia, and of Midian.* With Portrait, Geological, Botanical, and Conchological Reports, Plans, Maps, and Woodcuts. Edited by his Widow, Author of *Jacob's Flight*, &c. (London, Trübner & Co., 1878.)

steamed down the Gulf of Suez and up the Gulf of Akaba, arriving at Akaba on the 27th. Here the Doctor had intended to find *his* Mount Sinai, and here accordingly he found it, and fixed for the purpose on a mountain called Jebel Bâghir, some 5000 feet high, and about 10 miles north-east of Akaba. Two engravings of this mountain, we suppose from sketches by Mr. Milne, are given, and it is certainly very well shaped and stands out nobly; but we must confess to being entirely unconverted by Dr. Beke's arguments as to its being the true Mount Sinai. He dwells much on a neighbouring Sheikh telling him that the mountain had always been known as the "Mountain of Light." One critic has suggested that this name originated with the Doctor himself, and that the Sheikh adopted his unconscious hint to please him; but even if the mountain should really be known by this name, Dr. Beke himself has demonstrated the worthlessness of ordinary Oriental tradition. There being at the foot of the mountain a mosque in honour of a famous saint from Jaffa, and the summit being a place of sacrifice, appear to us, if arguments at all, to be utterly beside the mark. Dr. Beke went a short distance inland to the north-east, experiencing very stormy weather, with torrents of rain. He then returned in a straight line from Akaba to Suez, travelling in a camel litter called a *takhterawân*, which he describes as like a London cab, only not on wheels and without fixed sides or top, which are supplied with curtains; he found this a very tolerable mode of conveyance. He reached England in March to take part in a paper war already begun in various prints, chiefly in the *Times* on his *discovery*. The Doctor gallantly held his own ground, and, unconvinced as we are, we cannot but sympathise with him, and admire his perseverance and energy in undertaking this journey at the age of seventy-four and in feeble health: it is impossible too not to admire the spirit in which he undertook it, expressed in his own words:—"I feel carried away by the inward conviction that I am right, and that all things will work together for my good. I feel that I am doing the work of the Almighty, and that he will not desert me whilst in His service."

Stanford's Compendium of Geography and Travels. Based on Hellwald's *Die Erde und ihre Völker*. Central America, the West Indies, and South America. Edited and extended by *H. W. Bates*, Assistant-Secretary of the Royal Geographical Society, with Ethnological Appendix by *A. H. Keane, B.A.* (London: Stanford, 1878.)

The editor of this important work, so well and so favourably known as the author of *The Naturalist on the River Amazons*, and Assistant-Secretary of the Royal Geographical Society, informs the readers of this elaborate and highly illustrated volume that his chief object has been to adapt Von Hellwald's admirably written survey of the countries treated of, to the presumed requirements of English readers. In this announcement Mr. Bates does not do justice to the immense labour which he has expended in bringing up the work of the German author to the present stand-point of geographical knowledge; for in this respect the volume has been practically re-written, whilst as far as natural history and the geographical relations of faunas and floras are considered, the work is entirely original. The publisher is indeed to be congratulated in having secured the assistance of one so eminently qualified, as Mr. Bates, to write with the highest authority on the geography and natural history of Central and South America, and the reader as he wanders from Mexico to Patagonia, led by his skilful hand, will find the most accurate information concerning each country visited, condensed in as small a space as is compatible with an account that treats of the configuration of the land, its general outlines and extent, geological formation, climate, flora, fauna, inhabitants both aboriginal and immigrant, government, social condition and products.

We can offer no more favourable recommendation of this work than to express our opinion that it is equal in every respect to the first number of the series published, namely "Africa," and which volume has, we believe, met with the appreciation it deserves from the public. If the remaining volumes of the series, which are to treat of the other grand divisions of the globe, are edited in the same masterly manner as this on Central and South America—and from the names announced in connection with them there can be no doubt that they will be—the English reading public may be congratulated on possessing in these volumes a compendium of geography and travel unsurpassed in this or any other language.

The arrangement adopted, by which the various countries included within the scope of this work are passed under review, is on the whole the best that could be devised. It has been divided into three grand sections. First, Central America, embracing Mexico and the smaller States of the Isthmus, Guatemala, Honduras, San Salvador, Nicaragua, Costa Rica, and British Honduras. Secondly, the West Indies, by which is understood the large group of islands lying east of Central and North of South America. Thirdly, South America proper, which stretches southwards from the Isthmus of Panama to the Straits of Magellan. We have already remarked that the information respecting each state, country, or empire has been condensed within the very narrowest limits possible, it is therefore impracticable in a brief notice to do more than draw attention to the method by which this very satisfactory arrangement has been attained. Each section is accompanied with one or more well-coloured maps, and the book is illustrated with excellent woodcuts. Mr. A. H. Keane, in the form of an appendix, adds a very valuable paper on the Ethnography and Philology of America.

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Jenkinson's Practical Guide to North Wales. By *Henry Irwin Jenkinson, F.R.G.S., &c.* With Maps. (London: Stanford, 1878.)

The labour and care bestowed in the production of this work is truly remarkable, and as a *practical* Guide to North Wales will, we venture to assert, prove invaluable to tourists. The general arrangement of the book leaves nothing to be desired. It is divided into eight sections, viz. Chester, Llandudno, Bettws y Coed, Snowdon, Dolgelley, Bala, Llangollen, and Aberystwith, and contains besides interesting chapters on the antiquities and history of North Wales, as well as general information most essential to travellers in a country where the language that is spoken is almost entirely unknown. The above sections are also published in five parts, each of which, illustrated with a map, can be purchased separately; but to intending tourists we would strongly recommend the complete work, which, although containing upwards of 500 pages, is of a sufficiently handy size to be carried in one's pocket. Two valuable maps accompany the work: a general map of the country described, on a scale of 4 miles to the inch, showing the railways and altitudes, and a railway map, forming an Index to the Ordnance Survey maps. A more useful companion than this last guide of Mr. Jenkinson's it would be impossible to find, and it will be the visitor's own fault if he misses anything worthy of note in the counties comprising North Wales, so rich, as is truly said, "in coast scenery, beautiful valleys, and grand mountains."

Cartography.

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THE PARIS EXHIBITION OF 1878.

THE arrangement of the Paris Universal Exhibition of 1878 makes it very difficult to gain a complete notion of the cartographical productions contained therein, scattered as they are, not only among different nations, but also among different groups and sections. The following notes cannot therefore claim to be an exhaustive notice of all the various collections of maps, charts, &c., but they treat of some of the more conspicuous of these collections which are of very high interest and importance.

France herself naturally claims foremost mention, and her collections alone more than fill two good-sized rooms, towards the south-east end of the main building. The largest map of all "Carte topographique du Depôt de la Guerre à 1:80,000, Dressée par les ingenieurs geographes et les officiers du Corps Etât Major 1818-1878," (the engraving of which, curiously enough, was only completed this year), is too bulky to be exhibited in these galleries, and has been hung in a conspicuous place between the south-east dome, near the Porte Tourville and the large vestibule running parallel with the Ecole Militaire, across the road. The lower part of this map is raised to a height of 18 feet above the archways, so as not to interrupt the traffic arrangements, which has the effect of merging the details (which deserve closer examination) in the general effect. The latter is, however, very fine, and at a good distance the structure and inequalities of the ground can be well distinguished from the isolated mountain of Cassel, which forms a dark spot on the northern frontier, across the hills of the Seine valley and Paris basin, and the conspicuous summits of the central plateau down to the mountain masses of the French Alps, and the culminating peaks of the Pyrenees. The most notable feature, however, of this work—the engraving of which extends over 1750 square feet, and which represents the joint work of nearly 800 officers or artists, geodesists, topographers, draughtsmen, and engravers—is the uniformity which has been so happily preserved in its execution. Its 264 sheets have been engraved in the space of 53 years (1825-1878), by 65 different artists, but who, by being all trained in the same school, have adhered carefully to the same traditionary style, which involved amongst other things the supposition of the light falling perpendicularly on the sheet and a rigorous exclusion of "fancy" treatment.

The execution of a new map of France, destined to supersede Cassini's map, was ordered by a royal decree of the 6th August 1817. The geodetical and topographical work began simultaneously on the 1st April 1818; the geodesy and triangulation of the 1st and 2nd order were completed in 1854, the triangulation of the 3rd order in 1863, and the topography in 1866. The field surveys, on the scale of 1 : 40,000, were executed by officers of the corps of engineer-geographers and of the *Etât Major*, and the reductions to the scale of 1 : 80,000 by the draughtsmen of the Depôt de la Guerre. The engraving of France proper was, as already remarked, completed in the early part of this year, and of the nine sheets embracing Corsica, five have been completed. The revision of the surveys, begun in 1873, has already been carried over about a hundred sheets, forty of which are now completed.

Other works exhibited by the Depôt de la Guerre include the reduction from the above map to the scale of 1 : 320,000, engraved on copper. This map, about 12 feet square, makes a valuable (though not a portable) communal map of France, and its general effect is good, though there is still a blank in the sheet of the Hautes and Basses Alpes round about Gap, where the hill-etching has not yet been completed. A laborious example of hill-etching may be seen close by in the *Carte du Massif des Alpes à* 1 : 80,000. This is really a portion of the sheets of the larger map above described, joined together for the sake of exhibiting the delineation of a mountainous region. Subjected to a close inspection, such as the low hanging of this map allows, inequalities of style in the different sheets will inevitably betray themselves; but we consider that, nevertheless, they join together quite as well as many of the sheets of our own one-inch Ordnance Survey or Atlas of India. The map has been transferred to three differently-coloured stones, and the inequalities of the ground are shown by the addition of contour lines 20 metres apart. It extends from Mont Blanc to the Mediterranean, and from the meridian of Toulon to that of Turin. A good deal of extra-French territory is thus included, and this portion has been constructed from a larger map of Piedmont, on which the level lines are scanty.

Below the above are to be seen the following: a map of the environs of Nemours (Algeria), lithographed in six colours with contour lines, a reduction to the scale of 1:200,000, on stone, in four colours; of the large map of France, without hills; a proof of the sheet of Medeah, lithographed in four colours as a specimen of the future map of Algeria; and lastly, a lithographed sheet of the conventional signs and marks used in the maps of the Depôt.

A map on the scale of 1 : 600,000 on copper, constantly kept up to date, exhibits all the French railways; and the same map, enlarged by photo-lithography, and printed in eight different colours, shows the lines of each concessionary company by a different tint. In the case of a map of the frontier of the Alps on the scale of 1 : 320,000 (a map reduced from the large map of France and extending from the Lake of Geneva to the Mediterranean and the Rhone to the upper basin of the Po), an endeavour has been made to delineate the mountains by varying shades of bistre, a plan which has the advantage of not obscuring the writing and minor details. The lines of levels throughout France, 100 metres apart, have been placed on a lithographed map on the scale of 1 : 800,000, which exhibits by this means the variations of height in a most exact and lucid manner. Although not yet complete, this map is a most satisfactory production. The map of the Department of the Seine on the scale of 1 : 80,000, lithographed in four colours, has been constructed according to the most recent reconnaissances executed between 1872 and 1874, forms a handy *vademecum* to Parisians and strangers who may require to extend their rambles beyond the limits of the city.

Besides the above, there are interesting specimens of various processes in the more mechanical of the operations of this department of the State. A copperplate in course of correction is exhibited with the erasures marked in yellow and the additions in red, and the portion of the plate requiring treatment covered with a protecting varnish, with certain openings made to receive the new material deposited by the galvano-plastic process. Other plates show the process of subsequent correction. We next see the process of producing by the galvano-plastic process, a duplicate plate showing in a central position topographical details which are scattered on the edges and corners of two or more plates. Other processes exhibited illustrate the use of zinc plates instead of the more cumbersome stones, as well as processes of minor interest.

Turning our attention to private exhibitors we must mention an interesting piece of work by Messrs. E. and R. Cortambert, entitled, "Geographie Biographique. Distribution des personnages celebres par lieux de naissance et par genre de célébrité, 1878." The numerous celebrated personages whose birthplaces are here exhibited, are divided into sovereigns, philosophers, warriors, geographers, travellers, statesmen, &c., categories which are indicated by different colours. A similar map prepared with reference to English worthies would be very interesting.

The most successful instance of showing heights by gradations of colour is called "Essai d'une carte hypsometrique de la France," (Ministère de la Guerre) Echelle 1:.500,000. This map is done by hand, and illustrates gradations of height by shades of colour varying from blue (sea level) through yellow, green, citron, brown to white (snow) and dark blue (glaciers). But the great expense of such a process which includes fourteen different shades, and would probably require at least ten printings, will effectually prevent its general adoption. Still the general effect is very striking and picturesque.

A good instance of the same effect but managed by a much simpler method will be found in a "Carte topographique du Département des Vosges." Echelle 1:80,000, par Ad. Garnier, conducteur des ponts et chaussées." The light here is supposed to fall from the left hand upper corner, and the heights are represented by different shades of brown.

A very useful specimen of what in England county maps might be made is afforded by the "Cartes routières et hydrographiques des departements de la Dordogne, La Lozère, Haute-Vienne, &c.," on scales of 1: 80,000, 1:100,000, &c. The scales are convenient, being less than our own one-inch Ordnance Survey, and the information supplied by them is very full, including as it does details of roads, imperial and local (completed and not completed), the limits of prefectures, sub-prefectures, cantons, communes and hamlets, cultivated and waste land, canals and navigable rivers, &c.

We must not conclude our notice of French Cartography without an expression of regret that we cannot do justice in a brief notice like the present to the various admirable works exhibited by Messrs. Delagrave et Cie, Andriveau-Goujon, and Levasseur. As specimens of works suitable for educational purposes many of their productions cannot be surpassed.

Among the many valuable charts exhibited by the Depôt de la Marine, those of Guadaloupe, New Caledonia and Newfoundland, claim notice for the intricacy of soundings and the excellence of the engraving. The chart of the first named shows that the island is superimposed on a sort of submarine base, of larger periphery than the island itself, for at a certain distance from the shore the soundings all round drop in a remarkable manner from 62 to 145, 63 to 155 mètres, and so on. A survey destined probably to prove of great use in the opening of trade with Tongkin is entitled "Reconnaissance hydrographique du delta de Tongkin, 1874-5, executée par Ingenieurs Heraud et F. Bouillet;" while the commerce of the future will we trust be similarly interested in the labours of Lieut. N. B. Wyse, who sends a large-scale drawing of Southern Darien with his routes for the inter-oceanic ship-canal, from the Golfe de San Miguel to the Golfe de Uraba and the coast north, laid down thereon.

In the Spanish section we are confronted first with a fine lithographed plan of Madrid, "Plano parcelario de Madrid. Direccion general del istituto geografico y estadistico." Scale 1:2000 in 16 sheets. The sheets of the "Mapa Topografico de Espana, escala de 1:50,000," which are exhibited, are clear and good. The cultivated ground, waste, pasture and forest are all coloured differently and contours are laid down at very brief intervals. From the volume of "Memorias" accompanying these maps, we learn that the total number of sheets of this standard map of Spain is not yet settled, but that 559, embracing the larger portion of the country have been already published. A curious reproduction of the original map of the Straits of Magellan, as delineated by their discoverer, will be found in "Carta de los estrechos de Magellanes y le Maire." The Memoirs of the Geographical and Statistical Institute above referred to include, in Tome I., an amount of matter relating to every branch of trigonometrical and geodetical science and of great interest to officers engaged in such labours.

The largest collection of maps in the English Section is exhibited by Mr. Stanford, whose productions are of considerable merit. For specimens of printing we are shown some neatly-coloured geological and other maps prepared for Mr. Drew's work on Jummoo and Kashmir; and of lithography, the map of Khorassan, with parts of Irak, prepared by Mr. T. Saunders, to illustrate Captain Napier's travels in Northern Persia. The best specimens of engraving exhibited by Mr. Stanford are the Alpine Club map of Switzerland, with parts of neighbouring countries, scale 1:250,000, edited by C. Nichols, the hill-etching of which is excellent; the map of Sinai and desert of the Wanderings, compiled by Mr. T. Saunders for Dr. Smith's classical atlas; and the map of Modern London and Suburbs on the scale of 6 inches to the mile. We must observe that the omission of any date to this map (a common practice among English cartographers) is a serious fault.

A very quaint plan of London is exhibited in the same collection. It bears the title—"An exact delineation of London and Westminster and Suburbs thereof, together with y^e^ Burrough of Southwark and all y^e^ Throughfares, Highwaies, Streetes, Lane, Allies w^th^in y^e^ Same. Composed by a Scale and ichnographically described by Richard Newcourt, of Somerton, in the Countie of Somerset, Gentleman." The buildings extend on the east to a point a little east of the Tower, and proceeding round from east to west the limits touch Shoreditch, Bunhill, Clerkinwell, St. Giles Fields, St. James Palace and Park (with deer disporting therein), and Tutle (Tothill) Fields. Stanford's map of New Zealand, published by the Society for Promoting Christian Knowledge and the National Society, is very clear in outline, writing, and hill-drawing, and altogether is a good example of what an educational map should be.

Messrs. W. and A. K. Johnston deserve mention for their execution of "Case's Map of the United States, British Provinces, and Mexico, and part of W. Indies (1874);" and Mr. Bartholomew for a capital and varied collection of maps, among which his "Library Chart of the World on Mercator's projection" stands pre-eminent. The lines of ocean steamers are marked on this chart; the deep-sea soundings of the 'Challenger,' 'Tuscarora,' &c., are laid down; and, altogether, the production is carefully compiled. A plan of Edinburgh and Leith, and a reduced Ordnance map of Scotland, by the same firm, are good specimens of engraving.

It is much to be regretted that the Ordnance Survey and Admiralty and India Offices did not consider it worth while to exhibit any of their work. We also missed among exhibitors the name of one of the best of London map makers, Mr. Weller.

In the Italian section we noted a "Carta postale d'Italia con indicazioni dei capiluoghi di provincia e di cucondario, delle strade ferrate in ezercizio ed in costruzione, e delle linee di navigazione, Ottobre, 1877. Scala 1:600,000." There is also a series of outline maps on the scale of 1:500,000, showing the national and provincial roads, (2) the railroads, (3) the telegraphic lines, and (4) the hydrographic details, ports, and lighthouses, information which might, without confusion, have been all embodied on one map. The last-named map shows also the extent of the various river basins, and the admirable manner in which the coasts of Italy, Sardinia, and Corsica are lighted. Of Sicily a finely-executed and detailed photo-lithographic reduction to the scale of 1:100,000 of the original survey was exhibited; and as regards geology, several maps of different portions of Italy were hung round the gallery, all being united in a smaller scale (1:600,000) geological map, constructed by the Reale Comitato Geologico. This map includes all Piedmont and N. Italy, Corsica, Sardinia, and Malta.

C. E. D. B.

Log Book.

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The Land Route between China and Siberia.—Dr. E. Bretschneider, physician to the Russian Embassy at Peking, has recently communicated to the Bremen Geographical Society some notes on travelling through Mongolia between China and Siberia which are likely to be very serviceable to intending travellers along this route, especially since the Yenisei River promises to become a frequented thoroughfare into the heart of Asia. He says that in April, May, August, and September Siberian roads are apt to be very bad and that it is difficult then to do 20 versts a day, while in June and July Dr. Bretschneider, travelling as courier, has done 200 and even 240 versts in the twenty-four hours. In October and (still more) from November till March travelling is very trying owing to the extreme cold, which on the plateaux may be often expected to reach to 30 degrees (Reaumur) below zero. Such a time is ill adapted for researches into any branch of natural history except perhaps zoology.

The most important *vade-mecum* for travellers is a two (or four) wheeled Chinese wagon which may be generally purchased for 100 rubles in Kiachta but which travellers will do well to take the precaution of getting at Irkutsk. To these camels or horses are yoked and they serve to sleep in. The way between Kiachta and Peking may be divided into three sections, viz. that between Kiachta and Urga, which leads over hilly ground, from Urga to Kalgan across the desert of Gobi, and from Kalgan to Peking across Chinese territory. Along the entire route there are 70 stations, and the distance is 1560 versts, which in 1866 Dr. Bretschneider accomplished in nine days. The usual cost is about 240 rubles.

Population of the Brazils.—The *Notions de Chorographie du Brésil*, par Joaquim Manoel de Macedo, traduit de J. E. Halbout, Leipzig, gives, according to the *Proceedings of the Berlin Geographical Society*, the most authentic information concerning the population of Brazil. The estimate is based on the official figures of the Brazilian Ministry for 1872, and according to it the total population is 10,112,061 inhabitants, of which the slaves number rather more than a million and a half, the remainder being free.

Abyssinia.—The last number of the *Geographische Blätter*, published by the Society of Bremen, contains an interesting account of the actual condition of Abyssinia, by Herr Camil Russ; also a brief history of the turbulent state of that country from 1868, the period of the British expedition, up to the present time. In May last King Johannes was in Shoa, punishing King Menelek for his inroad into Central Abyssinia, and in the meantime the Governor of Hamazen, Wolde Michael, had invaded the Bogos country to the consternation of the Egyptians. It will be remembered that last year Camil Russ made an attempt to reach Enarea and Kaffa, south of Abyssinia, with a trading caravan, intending to reach the east coast of Africa, about the mouth of the Juba, but failed, and returned to Egypt in the beginning of March.

Journey in Eastern Africa and Madagascar.—Dr. C. Rutenberg, a young scientific traveller from Bremen, has recently made an interesting journey through a portion of Eastern Africa and in the northern part of Madagascar. He started from Cape Town about May 1877, and made his way up country to Bloemfontein. From hence to Petermaritzburg he did not go by the regular post route but by a track which he followed on horseback across Basutoland over the Drakensburg Mountains, and by this means reached an interesting part of the country, from a geographical point of view, where the Maluti and Kahlamba mountains, which here form the escarpment of an extensive plateau, unite to the northward into the lower Drakensburg range. Dr. Rutenberg ascended this plateau which forms the water-parting between the Orange and Vaal rivers, which flow into the Atlantic, and the Tugela into the Indian Ocean. The height of the highest point ascended by the Doctor was, according to a trustworthy aneroid, 11,500 feet, whereas on the maps it is marked as 10,357 feet. From this plateau the above-mentioned rivers dash over perpendicular rocky cliffs down into the Orange Free State (5000 feet), and towards Natal on the other side, which lies about 3000 feet. Dr. Rutenberg detected many important inaccuracies in Teppe's new and pretty-looking map of the Transvaal. Dr. Rutenberg then crossed over and landed at Vohemar in Madagascar, and thence journeyed over to Yfassy (a route which has not yet been described), disproving the existence, as generally imagined, of a central range running longitudinally as far as this point. From Madzunga he made his way southward to Antananarivo, the capital, where about 100 Europeans live, and there are three missions. From hence he made an excursion to the Ankaratra mountain the highest in the island, and eventually returned to Vohemar after five months' absence.

The Italian Expedition to Central Africa.—The June *Bollettino* of the Italian Geographical Society remarks that the statements made as to the failure and return to Khartum of Messrs. Gessi and Matteuci are, to say the least, premature, as the latest telegrams, dated 11th May from Khartum and 13th May from Massowah only mention that they have retraced their steps from Fadasi to Fazoklu, from whence they may very probably try to advance by different routes into the heart of the country.

NOTICE.

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Letters and Articles intended for insertion should be written on one side of the paper only, and must be accompanied by the name and address of the writer; not for publication, but as a mark of good faith.

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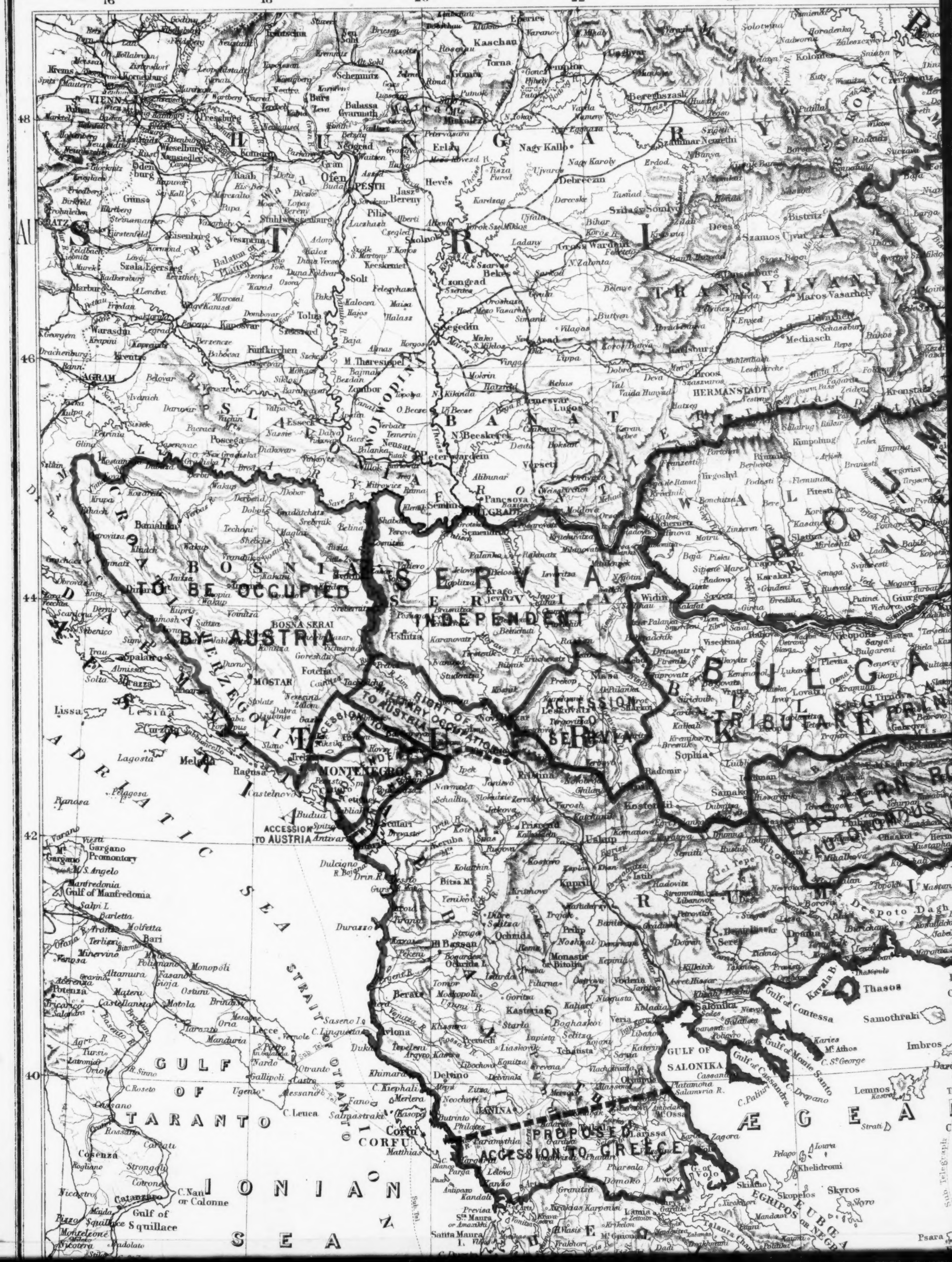
MAP TO ILLUSTRATE THE TREATY



TO ILLUSTRATE THE TREATY OF BERLIN.

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18 20 22 24 26 28 30 32

48 46 44 42 40

AUSTRIA-HUNGARY
HUNGARY
TRANSYLVANIA
ROUMANIA
RUSSIA
SERVIA
INDEPENDENT
BULGARIA
TRIBUTARY PRINCIPALITY
EASTERN ROUMELIA
AUTONOMOUS PROVINCE
BOSNIA
OCCUPIED
BOSNA SERAI
MONTENEGRO
ALBANIA
GREECE
TURKEY
BLACK SEA
AEGEAN SEA
SEA OF MARMORA
GULF OF SALONIKA
ACCESSION TO AUSTRIA
MILITARY OCCUPATION
RIGHT OF
PROPOSED ACCESSION TO GREECE

Pesth
Ofen
Debreczin
Nagy Kallo
Szamos Ujvar
Maros Vasarhely
Hermanstadt
Kronstadt
Mediasch
Bistritz
Klausenburg
Temesvar
Lugos
Pancsova
Peterwardein
Neusatz
Essek
Semlin
Belgrade
Widin
Krajova
Rustchuk
Giurgevo
Nicopoli
Plevna
Sophia
Samakov
Kustendil
Uskup
Prisrend
Ipek
Novibazar
Mitrovitza
Ushitza
Loznitza
Jadar R.
Schabatz
Semendria
Orsova
Turnu Severin
Bucharest
Slatina
Pitesti
Giurgevo
Tirgoshyl
Tirgovist
Kimpolung
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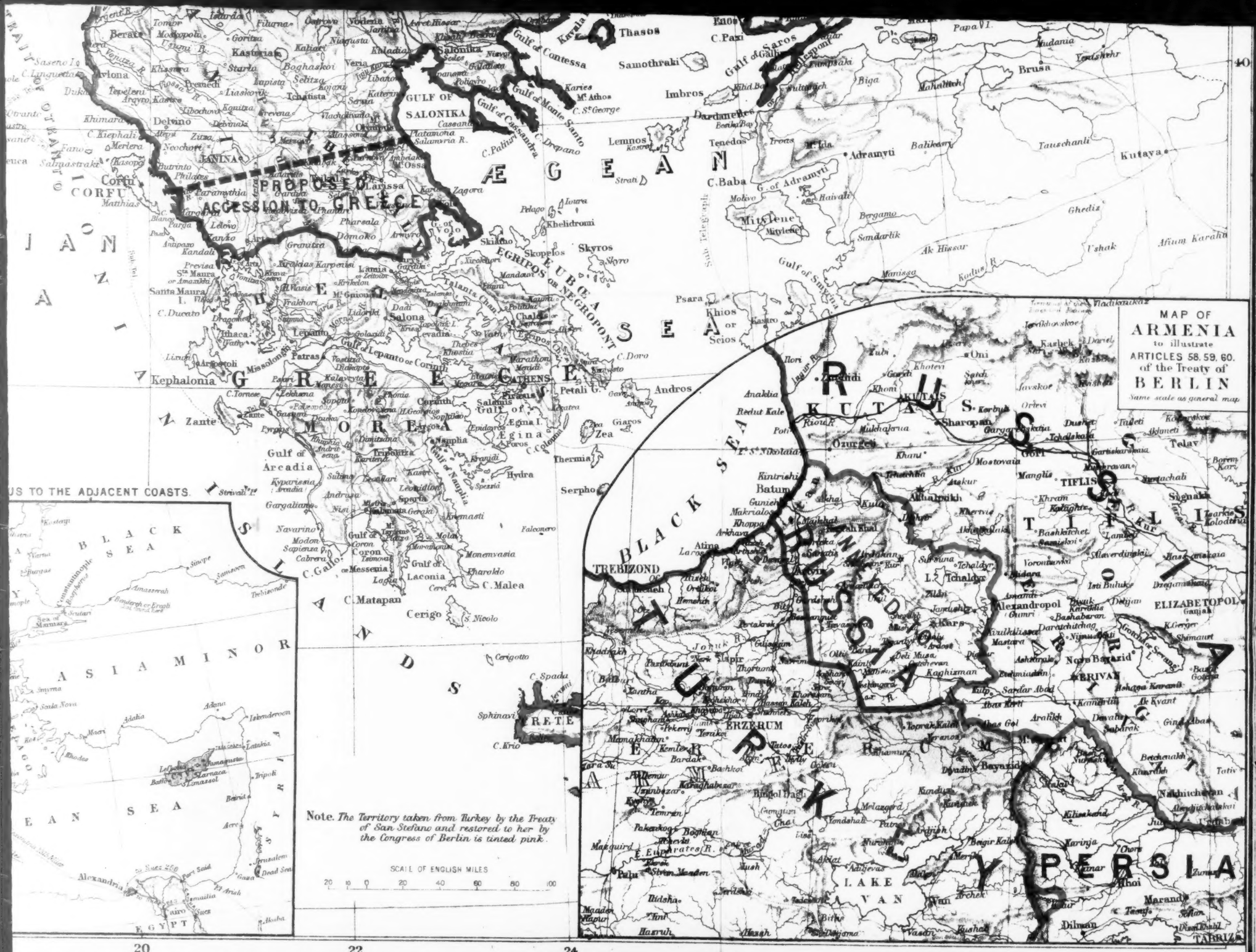
Kischenau
Bender
Galatz
Ibrail
Reni
Ismail
Kilia Mouth
Tulcha
Sulina Mouth of the Danube
St Georges Mouth
Odessa
Mouth of the Dniester
Akerman
Kamenetz
Chotin
Botuchany
Bieltsi
Jampol
Olgopol
Olviopol
Bobrinetz
Kherson
Nicolaieff
Ananiev
Tiraspol
Dubossary
Grigoriopol
Kischenau
Leuchani
Fallsi
Berlad
Reman
Baleu
Pudjesti
Barsova
Komrat
Kulm
Beresina
Akerman
Malgaroslavitz
Tatarbunar
Kilia Mouths
Serpents I.
Letea I.
Sarata
Kagharlik
Kustendji
Tusla Burun
Mangalia
Tchabler Burun
Halvakoi
Basardik
Kavarna
C. Kaliakra
Galata
Bilandjik
Karo Burun
Erekli
C. Emineh
Gulf of Burghas
Sizeboli
C. Zeitan
Agathopoli
C. Kuri or Iniada
Iniada
C. Serveh
Kalionjik Pt
Kara Burnu
Bosporus
Kirpen I.
Scutari
Ismid
Constantinople
Rodosto
Malgara
Enos
Thasos
C. Paxi
Marmora I.
Papa I.
Kemlik
Mudania
Brusa
Yenishehr
Mahallitch
Biga
Gulf of Saros
Hellespont
Dardanelles
Besika Bay
Imbros
Samothraki
Gulf of Contessa
Gulf of Monte Santo
Gulf of Cassandra
C. St George
C. Drepano
C. Paliuri
Karaka B.
Lemnos
Kastro
Tenedos
Troas
Mt Ida
Adramyti
C. Baba
G. of Adramyti
Mitylene
Molivo
Haivali
Bergamo
Ghediz
Ak Hissar
Ushak
Afium Karahi
Tauschanli
Kutaya
Balikesri
Manisa
Kodus R.
Gulf of Smyrna
Psara
Khios
Skyros
Skopelos
Egripos or Negropont
Khelidromi
Pelago
Skiatho
Lamia
Zeitoun
Salona
Talanta Chan
Gulf of Volo
Larissa
Janina
Corfu
Prevesa
Arta
Santa Maura
Ithaca
Cephalonia
Zante
Delvino
Avlona
Berat
Durazzo
Scutari
Ochrida
Monastir or Bitolia
Kastoria
Salonika
Seres
Drama
Despoto Dagh
Mt Olympus
Mt Athos
Mt Pelion
Mt Ossa
Mt Pindus
Mt Parnassus
Mt Olympus
Mt Despoto Dagh
Mt Rhodope
Mt Balkan
Mt Kom
Mt Ida
Mt Kaimakchalan
Mt Peristeri
Mt Tomor
Mt Lovcen
Mt Orjen
Mt Maglich
Mt Volujak
Mt Prenj
Mt Vlasic
Mt Cincar
Mt Ivan
Mt Velebit
Mt Plasa
Mt Kapaonik
Mt Rudnik
Mt Kopaonik
Mt Golia
Mt Ivanjica
Mt Javor
Mt Cer
Mt Fruska Gora
Mt Vrsac
Mt Kosmaj
Mt Avala
Mt Iglica
Mt Kleak
Mt Kopaonik
Mt Golia
Mt Ivanjica
Mt Javor
Mt Cer
Mt Fruska Gora
Mt Vrsac
Mt Kosmaj
Mt Avala
Mt Iglica
Mt Kleak

MAP OF

PROPOSED ACCESSION TO GREECE
GULF OF TARANTO
IONIAN SEA
GULF OF SALONIKA
AEGEAN SEA
EUBOEA or NEGROPONT
GREECE
MORE A
ATHENS
Gulf of Arcadia
Gulf of Lepanto or Corinth
Gulf of Contessa
Gulf of Monte Santo
Gulf of Cassandra
Gulf of Volo
Gulf of Smyrna
Gulf of Adramyti
Gulf of Salonika
Gulf of Squillace
Gulf of Argos
Gulf of Nauplia
Gulf of Messenia
Gulf of Koron
Gulf of Kharaklio
Gulf of Egina
Gulf of Salamis
Gulf of Petali
Gulf of Thermia
Gulf of Kissamo
Gulf of Sphakia
Gulf of Mirabello
ISLANDS
CRETE
Corfu
Cerigo
Cerigotto
Kephalonia
Zante
Santa Maura
Ithaca
Lepanto
Patras
Missolonghi
Salona
Lamia
Larissa
Volo
Janina
Arta
Prevesa
Delvino
Avlona
Berat
Durazzo
Scutari
Monastir
Salonika
Kastoria
Castoria
Thasos
Samothraki
Lemnos
Imbros
Tenedos
Mitylene
Skyros
Skiathos
Skopelos
Khios or Scios
Psara
Andros
Serpho
Hydra
Spezzia
Poros
Aegina
Salamis
Eleusis
Thebes
Livadia
Athens
Piraeus
Petali
Zea
Thermia
Sphinavi
Cerigotto
Navarino
Modon
Coron
Sapienza
Cabrera
Sparta
Tripolitza
Argos
Napphia
Corinth
Vostitza
Patras
Missolonghi
Lepanto
Vrachori
Karpenisi
Gardiki
Domoko
Pharsala
Zagora
Platamona
Salamvria R.
Katerini
Verria
Vodena
Janitza
Kastoria
Florina
Ostrovo
Goritza
Tomor
Berat
Avlona
Delvino
Khimara
Janina
Arta
Prevesa
Santa Maura
Ithaca
Cephalonia
Zante
Corfu
Matthias
Strait of Otranto
Strait of Messina
Strait of Bonifacio
Strait of Gibraltar
Strait of Dardanelles
Strait of Bosphorus
Strait of Kaffa
Strait of Yenikale
Strait of Kertch
Sea of Azov
Sea of Marmara
Sea of Asoff
Black Sea
Adriatic Sea
Mediterranean Sea
Archipelago
Dardanelles
Bosphorus
Constantinople
Adrianople
Rustchuk
Silistria
Varna
Burgas
Sinope
Samsoun
Amasserah
Trebizonde
Kertch
Yenikale
Taman
Anapa
Novorossisk
Sukhum Kaleh
Poti
Redut Kale
Batum
Kintrishi
Ozurgeti
Khobi
Zugdidi
Kutais
Kutais
Tiflis
Akhaltsikh
Akhalkalaki
Erzerum
Trebizond
Kars
Ardahan
Olti
Bardus
Bayazid
Lake Van
Lake Urumiah
Lake Tatta
Lake Bunar Hissar
Lake Ak Deniz
Lake Apollonia
Lake Ochrida
Lake Prespa
Lake Janina
Lake Kopais
Lake Copais
Lake Trichonis
Lake Vistonis
Lake Bourgas
Lake Derkos
Lake Sabanja
Lake Manyas
Lake Apollonia
Lake Koyashir
Lake Egerdir
Lake Beyshehr
Lake Tuzla
Lake Tatta
Lake Van
Lake Urumiah
Lake Tiberias
Lake Asphaltites
Dead Sea
Sea of Galilee
Jordan R.
Nile R.
Suez Canal
Port Said
Ismailia
Suez
Cairo
Alexandria
Damietta
Rosetta
Mediterranean Sea
Egypt
Turkey
Asia Minor
Roumania
Servia
Bulgaria
Montenegro
Dalmatia
Italy
Naples
Malta
Cerigo
Candia
Rhodes
Cyprus
Nicosia
Famagusta
Larnaca
Limassol
Paphos
Tripoli
Beirut
Acre
Jerusalem
Gaza
Jaffa
Damascus
Aleppo
Adana
Iskenderoon
Scala Nova
Smyrna
Mytilene
Lemnos
Thasos
Samothraki
Imbros
Tenedos
Mitylene
Skyros
Kh


MAP OF
ARMENIA
to illustrate
ARTICLES 58, 59, 60,
of the Treaty of
BERLIN
Same scale as general map
PROPOSED
ACCESSION TO GREECE
Note. The Territory taken from Turkey by the Treaty of San Stefano and restored to her by the Congress of Berlin is tinted pink.
SCALE OF ENGLISH MILES
20 10 0 20 40 60 80 100
AEGEAN SEA
BLACK SEA
MEDITERRANEAN SEA
ASIA MINOR
GREECE
TURKEY
PERSIA
RUSSIA
EGYPT
CRETE
Thasos
Samothraki
Imbros
Lemnos
Tenedos
Mitylene
Skyros
Khios
Andros
Serpho
Hydra
Zante
Cephalonia
Corfu
Santa Maura
Ithaca
Cerigo
Cerigotto
Trebizond
Batum
Kutais
Tiflis
Erzerum
Bayazid
Alexandropol
Elizabetopol
Kars
Ardahan
Olti
Delvino
Janina
Salonika
Gulf of Contessa
Gulf of Saros
Gulf of Salonika
Gulf of Volo
Gulf of Lepanto or Corinth
Gulf of Arcadia
Gulf of Nauplia
Gulf of Messenia
Gulf of Coron
Gulf of Smyrna
Gulf of Adramyti
Dardanelles
Egripos or Negropont
Euboea
Athens
Piraeus
Corinth
Patras
Missolonghi
Lepanto
Navarino
Modon
Coron
Laconia
Malea
Matapan
Sphinavi
C. Krio
C. Spada
Lake Van
Persian Gulf
Suez Canal
Alexandria
Cairo
Suez
Port Said
Jerusalem
Dead Sea
Gaza
Beirut
Acre
Tripoli
Latakia
Alexandretta
Scanderoon
Adana
Aleppo
Euphrates R.
Tigris R.
Black Sea
Sea of Marmara
Constantinople
Bosphorus
Sinope
Samsoun
Amasserah
Trebizonde
Batoum or Erogli
Sea of Azof
Scutari
Smyrna
Sea of Galilee
Jordan R.
Dead Sea
Jaffa
Gaza
Port Said
Suez
Cairo
Alexandria
Egypt
Persia
Turkey
Russia
Greece
Asia Minor
Syria
Arabia
Mesopotamia
Kurdistan
Armenia
Georgia
Circassia
Daghestan
Caucasus
Elbruz
Ararat
Kazbek
Tiflis
Kutais
Batum
Trebizond
Erzerum
Bayazid
Alexandropol
Kars
Ardahan
Olti
Elizabetopol
Erivan
Nakhichevan
Tabriz
Van
Lake Van
Persian Gulf
Euphrates R.
Tigris R.
Jordan R.
Dead Sea
Sea of Galilee
Sea of Marmara
Constantinople
Bosphorus
Black Sea
Mediterranean Sea
Aegean Sea
Ionian Sea
Adriatic Sea
Gulf of Salonika
Gulf of Contessa
Gulf of Saros
Gulf of Adramyti
Gulf of Smyrna
Gulf of Lepanto or Corinth
Gulf of Arcadia
Gulf of Nauplia
Gulf of Messenia
Gulf of Coron